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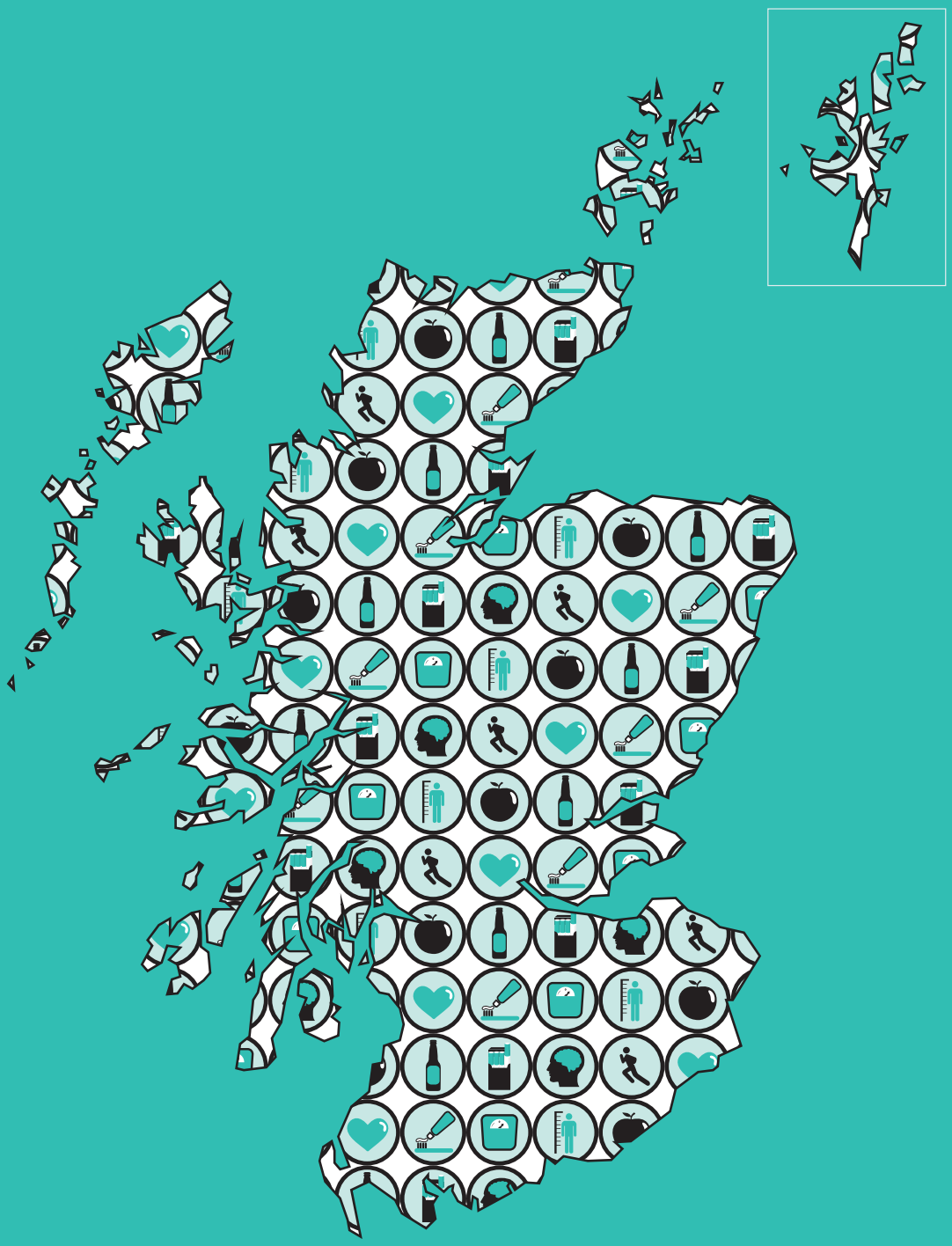

The Scottish Health Survey

2016 edition | volume 1 | main report

A National Statistics Publication for Scotland

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Joanne McLean, Shanna Christie and Linsay Gray

Foreword from the Chief Medical Officer

This report presents the findings of the 2016 Scottish Health Survey. The survey provides data extending back over 20 years and has been running to a continuous design since 2008. The 2012-2016 surveys were commissioned by the Scottish Government and produced by a collaboration between ScotCen Social Research, the MRC/CSO Social and Public Health Sciences Unit at the University of Glasgow, The Centre for Population Health Sciences at the University of Edinburgh and The Public Health Nutrition Research Group at Aberdeen University.

The survey provides us with an immensely valuable collection of data on cardiovascular disease and related risk factors including smoking, alcohol, diet, physical activity and obesity. Information on general health, mental health and dental health is also included.

The 2016 report includes a new chapter analysing, in combination, the prevalence of 4 key risk factors for poor health: smoking; hazardous or harmful alcohol consumption; overweight and obesity; and low physical activity levels. The analysis explores which demographic groups are most likely to report multiple risk factors, and the relationship between multiple risks and the presence of long-term conditions.

With each additional survey year, the ability to analyse trends adds considerably to the usefulness of this data source, while combining data from previous surveys allows for more detailed analysis of specific health conditions, risk factors and related health behaviours.

I am pleased to welcome this valuable report and to thank the consortium led by ScotCen Social Research for their hard work in conducting the survey and preparing this report. Most importantly, I would also like to thank the 5,884 people who gave their time to participate in the survey. The information they have provided is invaluable in developing and monitoring public health policy in Scotland.

Dr Catherine Calderwood
Chief Medical Officer for Scotland
Scottish Government Health Directorates

INTRODUCTION

Joanne McLean and Shanna Christie

POLICY CONTEXT

Health features prominently in the Scottish Government's National Performance Framework (NPF)[1,2]. The Government's core purpose, to create a more successful Scotland, is underpinned by five strategic objectives, one of which is to create a **healthier** Scotland. This objective is driven, in part, by the recognition of the considerable need to help people to sustain and improve health, particularly in disadvantaged communities. Of the 16 National Outcomes allied to the Government's strategic objectives, those of greatest relevance to health are:

We live longer, healthier lives

We have tackled the significant inequalities in Scottish society.

The Scottish Government's Fairer Scotland Action Plan[3], published in October 2016, sets out a range of actions designed to tackle health inequalities including new national strategies for mental health, alcohol, diet and obesity, and maternal and infant nutrition. The plan includes actions to improve access to primary care for those in deprived areas, health visiting and oral health programmes for children and young people, as well as support for those with caring responsibilities. The Health and Social Care Delivery Plan[4] (December 2016) sets out a government commitment to create national public health priorities in 2017 and a new single, national body for public health in 2019 to drive these priorities alongside joint public health partnerships at local level. The plan also includes an action to introduce an Active and Independent Living Improvement Programme to improve physical activity, self-management of health conditions, employment retention and return, and independent home living.

Many of the National Indicators that track progress towards the national outcomes have relevance to health[2]. The Scottish Health Survey (SHeS) is used to monitor progress towards the following National Indicators:

Improve mental wellbeing

Increase physical activity

Improve self-assessed general health

Increase the proportion of healthy weight children

Reduce the percentage of adults who smoke

In addition, SHeS data for children (aged 0-15) is used in the calculations to measure progress against the Government's purpose target to improve healthy life expectancy over the period from 2007 to 2017.

As a study of public health, the Scottish Health Survey plays an important role in assessing health outcomes and the extent of health inequalities in Scotland and how these have changed over time. Each of the chapters included in this volume addresses an aspect of health that relates either directly or indirectly to the Government's objective to create a healthier Scotland for everyone.

THE SCOTTISH HEALTH SURVEY SERIES

The Scottish Health Survey has been carried out annually since 2008 and prior to this was carried out in 1995[5], 1998[6], and 2003[7]. The 2016 survey was the twelfth in the series.

Commissioned by the Scottish Government Health Directorates, the series provides regular information on aspects of the public's health and factors related to health which cannot be obtained from other sources. The SHeS series was designed to:

- estimate the prevalence of particular health conditions in Scotland
- estimate the prevalence of certain risk factors associated with these health conditions and to document the pattern of related health behaviours
- look at differences between regions and between subgroups of the population in the extent of their having these particular health conditions or risk factors, and to make comparisons with other national statistics for Scotland and England
- monitor trends in the population's health over time
- make a major contribution to monitoring progress towards health targets

Each survey in the series includes a set of core questions and measurements (height and weight and, if applicable, blood pressure, waist circumference, urine and saliva samples), plus modules of questions on specific health conditions that vary from year to year. Each year the main sample has also been augmented by an additional boosted sample for children. Since 2008 NHS Health Boards have also had the opportunity to boost the number of adult interviews carried out in their area.

The 2012-2016 surveys were carried out by ScotCen Social Research, the MRC/CSO Social and Public Health Sciences Unit (MRC/CSO SPHSU) based in Glasgow, The Centre for Population Health Sciences at the University of Edinburgh and The Public Health Nutrition Research Group at Aberdeen University.

THE 2016 SURVEY

Topics

Cardiovascular disease (CVD) and related risk factors remains the principal focus of the survey. The main components of CVD are ischaemic heart disease (IHD) (or coronary heart disease) and stroke, both of which are clinical priorities for the NHS in Scotland[8,9,10]. Diseases of the circulatory system are the second most common

causes of death in Scotland after cancer, accounting for 27% of deaths in 2016. This includes 12% of deaths which are caused by IHD, with a further 7% caused by cerebrovascular disease (e.g. stroke)[11]. Early mortality from heart disease and stroke have also both improved in recent years (surpassing targets in both cases), but concern remains about continuing inequalities in relation to morbidity and mortality linked to these conditions[8]. The SHeS series now has trend data going back two decades, and providing time series data remains an important function of the survey.

Many of the key behavioural risk factors for CVD are in themselves of particular interest to health policy makers and the NHS. For example, smoking, poor diet, lack of physical activity, obesity and alcohol misuse are all the subject of specific strategies targeted at improving the nation's health. SHeS includes detailed measures of all these factors, which are reported on separately in Chapters 1-5. Chapter 9 covers CVD and diabetes. Chapter 6 focuses on those who have reported multiple behavioural health risk factors. The other chapters report on general health and caring (Chapter 7) mental health and wellbeing (Chapter 8) and respiratory health (Chapter 10).

Sample

The Scottish Health Survey is designed to yield a representative sample of the general population living in private households in Scotland every year.

The current survey design also means that estimates at NHS Health Board level are available by combining four consecutive years of data. NHS board results for the period 2013-2016 have been published at the same time as this report.

Those living in institutions, who are likely to be older and, on average, in poorer health than those in private households, were outwith the scope of the survey. This should be borne in mind when interpreting the survey findings.

A random sample of 4,496 addresses was selected from the Postcode Address File (PAF), using a multi-stage stratified design. Where an address was found to have multiple dwelling units, one was selected at random. Where there were multiple households at a dwelling unit, a single household was selected at random. Each individual within a selected household was eligible for inclusion. Where there were more than two children in a household, two were randomly selected for inclusion, to limit the burden on households. The individuals interviewed at these addresses form the 'main sample'.

Two further samples were selected for the survey in 2016: a child boost sample (4,181 addresses) in which up to two children in a household were eligible to be interviewed but adults were not, a Health Board boost sample (946 addresses) for those Health Boards which opted to boost the number of adults interviewed in their area.

Fieldwork

A letter stating the purpose of the visit was sent to each sampled address in advance of the interviewer visit. Interviewers sought the permission of each eligible adult in the household to be interviewed, and both parents' and children's consent to interview up to two children aged 0-15.

Interviewing was conducted using a combination of Computer Assisted Interviewing (CAI), where the questionnaire answers are input directly to a laptop, and self-completed paper questionnaires. The content of the interview and full documentation are provided in Volume 2 of this report.

Adults (aged 16 and over) and children aged 13-15 completed the interview themselves. Parents of children aged 0-12 completed the interview on behalf of their child.

Those aged 13 and over were also asked to complete a short paper self-completion questionnaire on more sensitive topics during the interview. Parents of children aged 4-12 years selected for interview were also asked to fill in a self-completion booklet about the child's strengths and difficulties designed to detect behavioural, emotional and relationship difficulties.

Towards the end of the interview height and weight measurements were taken from those aged 2 and over.

In a sub-sample of households, interviewers sought permission from adults (aged 16 and over) to take part in an additional 'biological module'. The biological module was administered by specially trained interviewers. In the module, participants were asked questions about prescribed medication and anxiety, depression, self-harm and suicide attempts. In addition, the interviewer also took participants' blood pressure readings and waist measurement, as well as samples of saliva and urine. Data from the biological module are reported every second year to allow two years of survey data to be combined. Data from the 2016 biological module will not be reported in this report; it will be reported next year combined with 2017 biological module data. Further details of these samples and measurements are available both in the Glossary and in Volume 2.

Survey response

In 2016, across all sample types, interviews were held in 3,339 households with 4,323 adults (aged 16 and over), and 1561 children (aged 0-15). Of these, 968 adults completed the biological module. The number of participating households and adults in 2016 is listed in the table below. Further details on survey response in 2016 are presented in Chapter 1, Volume 2.

Main and Health Board boost samples	
Participating households	2,811
Eligible households responding	58%
Adult interviews	4,323
Eligible adults responding	51%
Adults eligible for biological module	1,492
Adults who completed biological module	968
Child boost sample	
Participating households	523
Eligible households responding	64%
Child interviews (child boost sample only)	804
Child interviews (main and child boost sample combined	1,561

Ethical Approval

Ethical approval for the 2016 survey was obtained from the REC for Wales committee (reference number 12/WA/0261).

DATA ANALYSIS

Weighting

Since addresses and individuals did not all have equal chances of selection, the data had to be weighted for analysis. SHeS comprises of a general population (main sample) and a boost sample of children screened from additional addresses. Therefore slightly different weighting strategies were required for the adult sample (aged 16 or older) and the child main and boost samples (aged 0-15). Additional weights have been created for the biological module and for use on combined datasets (described below). A detailed description of the weights is available in Chapter 1, volume 2.

Weighted and unweighted data and bases in report tables

All data in the report are weighted. For each table in the report both weighted and unweighted bases are presented. Unweighted bases indicate the number of participants involved. Weighted bases indicate the relative sizes of sample elements after weighting has been applied.

Standard analysis variables

As in all previous SHeS reports, data for men, women, boys and girls are presented separately where possible. Many of the measures are also reported for the whole adult or child population. Survey variables are tabulated by age groups and in some cases also by Scottish Index of Multiple Deprivation (SIMD) and equivalised household income.

Statistical information

The SHeS 2016 used a clustered, stratified multi-stage sample design. In addition, weights were applied when obtaining survey estimates. One

of the effects of using the complex design and weighting is the standard errors for the survey estimates are generally higher than the standard errors that would be derived from an unweighted simple random sample of the sample size. The calculations of standard errors shown in tables, and comment on statistical significance throughout the report, have taken the clustering, stratifications and weighting into account. Full details of the sample design and weighting are given in Volume 2, Chapter 1.

Presentation of trend data

Trend data are presented, where possible, for the following surveys in the series (1998, 2003, 2008-2016). Data for the 1995 survey is not presented in this report but is available in previous reports and can be accessed online[12]. In some cases trend data are restricted to those aged 16-64 (the age range common to all eleven surveys in the series to-date), and for some other measures trends are available for the 16-74 age range (common to the 1998 survey onwards). Trends based on the surveys from 2003 onwards are presented for all adults aged 16 and over. Trends for children are based on the 2-15 years age group from 1998 onwards, and 0-15 years from 2003 onwards.

Presentation of results

Commentary in the report highlights differences that are statistically significant at the 95% confidence level. Statistical significance is not intended to imply substantive importance. A summary of findings is presented at the beginning of each chapter. Each chapter then includes a brief overview of the relevant policy area. These overviews should be considered alongside the higher level policies noted above and related policy initiatives covered in other chapters. A description of the methods and key definitions are also outlined in detail in each chapter. Tables showing the results discussed in the text are presented at the end of each chapter.

Availability of further data and analysis

As with surveys from previous years, a copy of the SHeS 2016 data will be deposited at the UK Data Archive along with copies of the combined datasets for 2014/2016, 2015/2016 and 2013/2014/2015/2016. In addition, trend tables showing data for key variables are available on the Scottish Government SHeS website along with a detailed set of web tables for 2016, providing analysis by age, area deprivation, socioeconomic classification, equivalised income and long-term condition for a large range of measures[13].

Comparability with other UK statistics

The National Statistician commissioned a piece of work to examine comparability and coherency between official statistics published by the four nations of the UK with the aim of ensuring there was clarity on the suitability of comparability across the UK. The review was carried out by a Government Statistical Service (GSS) Task and Finish Group on

Comparability. The findings, published in a Government Statistical Service publication[14], include guidance on comparing statistics on three of the topics included in this report: alcohol consumption (chapter two), smoking (chapter three) and obesity (chapter six). Further guidance on the comparability of statistics across the UK on these topics is included in the introductory section of each of the relevant chapters.

CONTENT OF THIS REPORT

This volume contains chapters with substantive results from the SHeS 2016, and is one of two volumes based on the survey, published as a set as 'The Scottish Health Survey 2016':

Volume 1: Main Report

1. Alcohol
2. Smoking
3. Physical Activity
4. Diet
5. Obesity
6. Multiple Risks
7. General Health and Caring
8. Mental Wellbeing
9. Cardiovascular Conditions and Diabetes
10. Respiratory Health

Volume 2: Technical Report

Volume 2 includes a detailed description of the survey methods including: survey design and response; sampling and weighting procedures; and, information on laboratory analysis of urine and saliva samples.

Both volumes are available from the Scottish Government's SHeS website. A summary report of the key findings from the 2016 report and a set of web tables are also available on the survey website: www.gov.scot/scottishhealthsurvey.

References and notes

1 *Scottish Budget Spending Review 2007*, Edinburgh: Scottish Government, 2007. See: www.gov.scot/Publications/2007/11/13092240/0.

2 See: www.scotlandperforms.com

3 Fairer Scotland Action Plan. Scottish Government. 2016 http://www.gov.scot/Resource/0050/00506841.pdf

4 *Health and Social Care Delivery Plan*. Edinburgh, Scottish Government. 2016. http://www.gov.scot/Resource/0051/00511950.pdf

5 Dong W and Erens B. *The 1995 Scottish Health Survey*. Edinburgh: The Stationery Office. 1997

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7 Bromley C, Sproston K and Shelton N [eds]. *The Scottish Health Survey 2003*. Edinburgh: The Scottish Executive. 2005

8 *Better Heart Disease and Stroke Care Action Plan*. Edinburgh, Scottish Government, 2009. www.gov.scot/Resource/Doc/277650/0083350.pdf

9 *Heart Disease Improvement Plan*. Edinburgh, Scottish Government. 2014. www.gov.scot/Publications/2014/08/5434

10 *Stroke Improvement Plan*. Edinburgh, Scottish Government. 2014. www.gov.scot/Publications/2014/08/9114

11 See: www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/general-publications/births-deaths-and-other-vital-events-preliminary-annual-figures/2016

12 See: www.gov.scot/scottishhealthsurvey

13 See: www.gov.scot/scottishhealthsurvey

14 Comparing official statistics across the UK. Full report available from: gss.civilservice.gov.uk/wp-content/uploads/2014/02/Comparability-Report-Final.pdf

NOTES TO TABLES

1 The following conventions have been used in tables:

n/a	no data collected
-	no observations (zero value)
0	non-zero values of less than 0.5% and thus rounded to zero
[ ]	normally used to warn of small sample bases, if the unweighted base is less than 50. (If a group's unweighted base is less than 30, data are normally not shown for that group.)

2 Because of rounding, row or column percentages may not add exactly to 100%.

3 A percentage may be quoted in the text for a single category that aggregates two or more of the percentages shown in a table. The percentage for the single category may, because of rounding, differ by one percentage point from the sum of the percentages in the table.

4 Values for means, medians, percentiles and standard errors are shown to an appropriate number of decimal places. Standard Errors may sometimes be abbreviated to SE for space reasons.

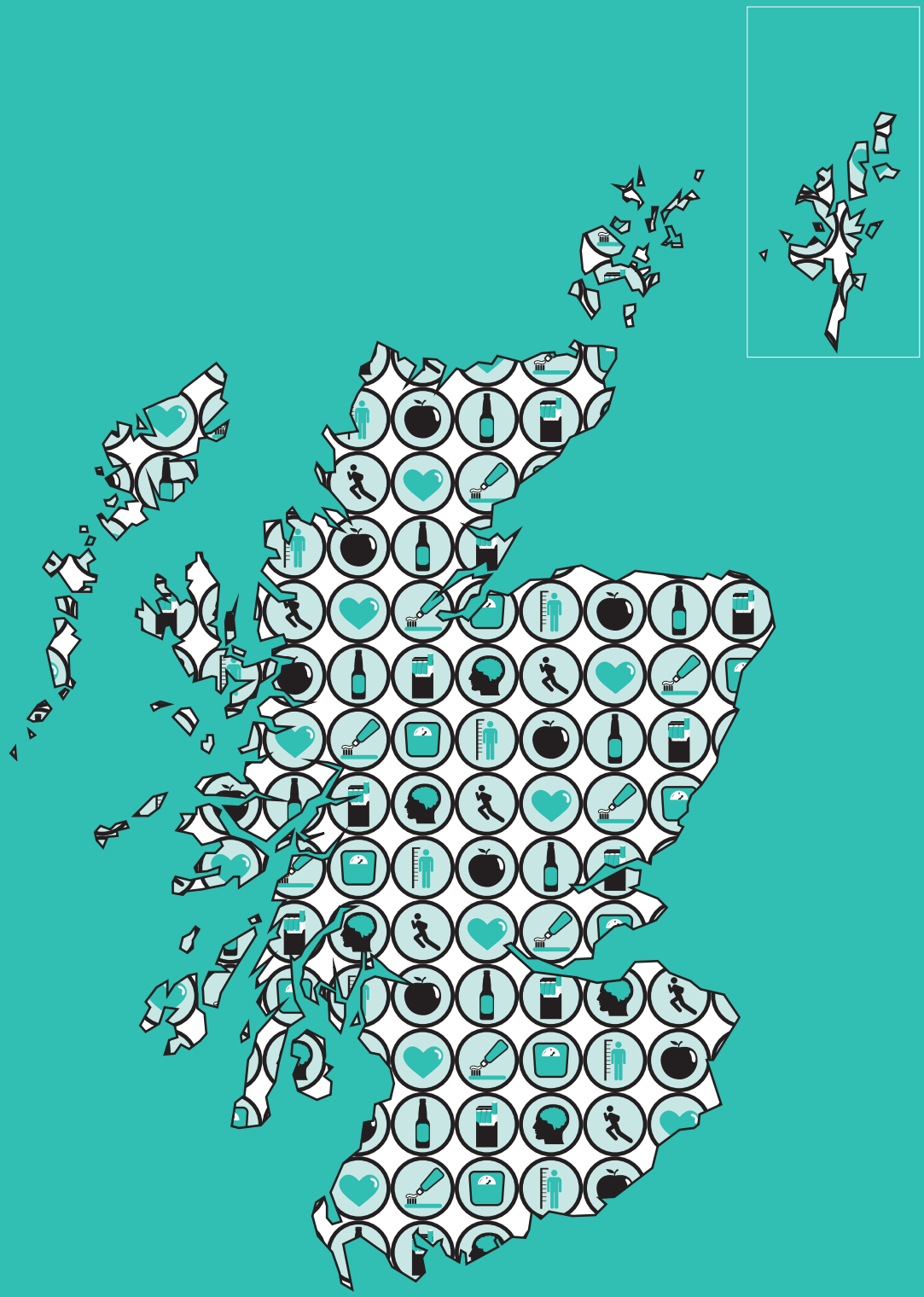
5 'Missing values' occur for several reasons, including refusal or inability to answer a particular question; refusal to co-operate in an entire section of the survey (such as a self-completion questionnaire); and cases where the question is not applicable to the participant. In general, missing values have been omitted from all tables and analyses.

6 The population sub-group to whom each table refers is stated at the upper left corner of the table.

7 Both weighted and unweighted sample bases are shown at the foot of each table. The weighted numbers reflect the relative size of each group in the population, not numbers of interviews conducted, which are shown by the unweighted bases.

8 The term 'significant' refers to statistical significance (at the 95% level) and is not intended to imply substantive importance.

9 Within the report Figures have generally been produced using data rounded to the nearest whole number. There are a small number of Figures which show data to the nearest decimal place in order to aid interpretation.



Chapter 1

Alcohol

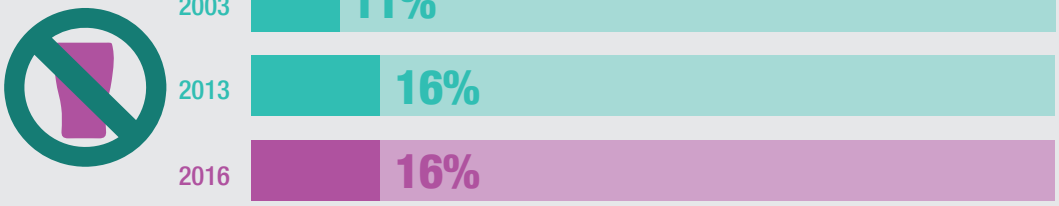
SUMMARY

- The proportion of adults drinking above the recommended maximum of 14 units per week fell from 34% in 2003 to 25% in 2013 and has stayed at a similar level since (25% in 2014 and 26% in 2015 and 2016).

The average number of units of alcohol consumed per week by drinkers has decreased since 2003

- Male drinkers were twice as likely to drink above the recommended maximum of 14 units a week than female drinkers.
- The percentage of adults reporting that they do not drink alcohol increased significantly from 11% in 2003 to 16% in 2013, and has settled at that level since.

The percentage of adults that do not drink alcohol has increased since 2003

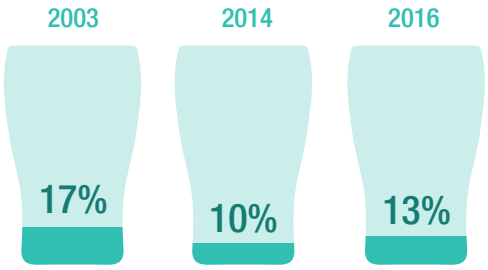


- More adults reported not drinking alcohol in the most deprived areas (26%) than the least deprived areas (11%) (age-standardised).
- Those in the least deprived areas drank on more days on average (2.9 days) than those in the most deprived areas (2.3 days).
- Male drinkers consumed significantly more alcohol on their heaviest drinking day than female drinkers in 2015/2016 combined (8.4 units compared with 5.9 units respectively).

Female drinkers in the least deprived areas had higher weekly consumption levels than female drinkers in other areas

- The average number of units of alcohol consumed by adults on their heaviest drinking day fell from 7.7 units in 2003 to 6.9 units in 2013, and has remained at a broadly similar level since then (7.3 units in 2016).
- Drinkers aged 75 and over consumed less alcohol at one time, but drank with greater frequency, on average, than younger drinkers who tended to consume greater volumes of alcohol in fewer drinking sessions.

The proportion of adults who drank on more than 5 days in the last week has risen after a period of decline



1 ALCOHOL

Linsay Gray, Alastair H Leyland

1.1 INTRODUCTION

The misuse of alcohol is recognised as a major issue in Scotland, carrying a risk of physical and mental health problems, as well as potential negative social consequences. Alcohol is now 60 per cent more affordable in the UK than it was in 1980: it is possible in Scotland today to exceed the new lower risk guidelines for alcohol (14 units per week) for less than £3[1]. The consumption of excessive quantities of alcohol leads to increased risks of high blood pressure, chronic liver disease and cirrhosis, pancreatitis, some cancers, mental ill-health and accidents [2]. The World Health Organization (WHO) cites alcohol as one of the largest risk factors for ill-health in wealthy countries, along with tobacco use, obesity and high blood pressure[2]. It also identifies higher levels of alcohol dependence and alcohol use disorders in the UK than across Europe as a whole[2].

A report published in 2009 attributed 5% of deaths in Scotland to alcohol[3]. Alcohol-related mortality increased between 2012 and 2016, with 1,265 alcohol-related deaths in 2016[4]. Whilst this remains lower than in any of the years from 2000 to 2010[5], it is around double the figures in the early 1980s. There are more than 94,500 GP consultations and around 35,000 hospital stays each year are for alcohol-related problems[6,5,7]. Although the rate of alcohol-related hospital stays has declined over the past 8 years, in 2015/16 the rate was four times higher than in 1981/82[5]. Alcohol-related morbidity and mortality are not evenly distributed throughout the population and the burden is greatest among those living in the most deprived areas[6,8,9]. Analysis of data from the Scottish Health Survey (SHeS) has shown that disadvantaged social groups have greater alcohol-attributable harms compared with those from advantaged areas, even after accounting for factors such as obesity, smoking status as well as different drinking patterns[10].

The harms associated with alcohol misuse are not restricted to those consuming alcohol, with potential impacts on others of injury, neglect, abuse, crime, and from concern for or fear of family members. A report published by Alcohol Focus Scotland in 2015 estimated that 1 in 2 people in Scotland are harmed as a result of someone else's drinking[11]. The relationship between alcohol and crime is also well documented. In the 2015 Scottish Prisoner Survey, 41% of prisoners reported being drunk at the time of their offence, although this represents a fall from 45% in 2013[12]. In 2006, it was estimated that alcohol is involved in 70% of assaults requiring treatment at A&E[13].

Misuse of alcohol also has a negative impact on children with an estimated 36,000 to 51,000 children living with a parent (or guardian) whose alcohol use is potentially problematic[14].
According to the Scottish Schools Adolescent Lifestyle and Substance Use Survey (SALSUS) 2015 [15] there has been a considerable decrease in the proportion of those aged 15 who reported drinking alcohol in the last week, from 34% to 17% between 2010 and 2015. Only a very small proportion of those aged 13 had drunk alcohol in the last week, decreasing from 14% to 4% over

the same time period. The proportion of pupils who have ever had an alcoholic drink has decreased again since 2013 – so the figure is at the lowest level for both age groups than at any time since the survey began in 1990 (28% of those aged 13 and 66% of those aged 15). However Scotland remains one of the countries with the highest rates of alcohol misuse among young people in the world[16.]

There are also economic impacts to alcohol misuse, with an estimated over 1.7 million working days lost per year in Scotland to reduced efficiency in the workplace due to the effects of alcohol, and a similar number lost due to alcohol-related absence[17]. In 2007, the total annual cost of excessive alcohol consumption was estimated to stand at around £3.6 billion[17]. Findings from the 2014 Scottish Social Attitudes survey showed that public awareness of the harmfulness of alcohol has increased, with 60% citing it as the drug causing most problems in Scotland[18].

1.1.1 Policy background

One of the **National Outcomes** underpinning the Scottish Government's core purpose is for people living in Scotland to 'live longer, healthier lives'[19]. Tackling alcohol misuse is integral to ensuring that people in Scotland live longer and to reducing the significant inequalities that exist in society. The government's commitment to addressing alcohol misuse is evidenced by the inclusion of a **National Performance Framework National Indicator** to 'reduce alcohol related hospital admissions'[19]. Other related indicators include the reduction of premature mortality, reducing reconviction rates and crime victimisation, and reducing deaths on roads[19].

In 2009, the Scottish Government published its alcohol strategy **Changing Scotland's Relationship with Alcohol: a Framework for Action**[20]. The strategy, which was accompanied by significant new investment in prevention and treatment services, built on the **Licensing (Scotland) Act 2005** implemented in September 2009. Further legislation includes the **Alcohol etc. (Scotland) Act**, which was implemented in October 2011. Among other measures the Act included the banning of quantity discounts in off-sales, the introduction of restrictions on alcohol displays and promotions, and the introduction of the mandatory Challenge 25 age verification policy. The **Air Weapons and Licensing (Scotland) Act 2015** created offences of an adult supplying alcohol to someone underage in a public place, which will assist the Police to better address underage outdoor drinking.

The **Alcohol (Minimum Pricing) (Scotland) Act 2012** allows for the setting of a price for a unit of alcohol, below which it cannot be sold. The legislation has not yet been implemented due to an ongoing legal challenge led by the Scotch Whisky Association, in conjunction with some other European alcohol producers[21]. A Supreme Court hearing is due in 2017. Informed by modelling carried out by the University of Sheffield[22], Scottish Ministers have indicated their preference for a minimum unit price of 50p. It is estimated that twenty years after implementation of the policy, when it is considered to have reached full

effectiveness, there would be around 120 fewer alcohol-related deaths per annum and around 2,000 fewer hospital admissions per annum[23].

Evaluation of Scotland's alcohol strategy lies with NHS Health Scotland, through the Monitoring and Evaluating Scotland's Alcohol Strategy (MESAS) work programme. The latest annual MESAS report was published in June 2017.

In January 2016, the UK Chief Medical Officers published new guidelines on alcohol consumption. This included advice that for both men and women, it is safest not to regularly consume more than 14 units of alcohol per week. This represents a reduction in the recommended safe amount for men. Advice was also included to spread the amount drunk over a number of days and limit the amount consumed in a single session[24].

The Fairer Scotland Action Plan[25], published in 2016, sets out plans for a new alcohol framework to tackle health inequalities through public health measures. The Health and Social Care Delivery plan[26] (December 2016) also states that the Alcohol Framework will be refreshed in 2017 in order to build on the progress made so far. The key areas of focus will be to reduce harms of consumption, supporting families and communities, encouraging positive decision-making and supporting effective treatment. This will include the introduction of a minimum unit price for alcohol. A study examining the public's attitudes towards alcohol policies in Scotland and England indicated broad support for these, although views on pricing policies and restricting access to alcohol was divided[27].

1.1.2 Measuring alcohol consumption in surveys

The alcohol consumption estimates discussed in this chapter are based on self-reported data collected during the survey interview. It is, however, important to note that surveys consistently obtain lower consumption estimates than those implied by alcohol sales or tax revenue data. This disjuncture can largely be explained by participants' under-reporting of consumption, due in part to not accounting for atypical / special occasion drinking[28], and there is also some evidence that survey non-responders are more likely than responders to engage in risky health behaviours, including hazardous alcohol use[29,30,31] . The most recently available annual estimates of alcohol sales in Scotland show that 10.5 litres (20.2 units per adult per week) of pure alcohol per person aged 16 years and over were sold in 2016 (the equivalent figure for England and Wales was 9.0 litres (17.3 units per adult per week) [32].

While self-reported survey estimates of consumption are typically lower than estimates based on sales data, surveys provide valuable information about the social patterning of individuals' alcohol consumption. Findings from the SHeS have been used in the MESAS evaluation of the Alcohol Framework and in the modelling of estimated impact of minimum unit pricing on consumption patterns across different groups in society[9].

1.1.3 Reporting on alcohol consumption in the Scottish Health Survey (SHeS)

Key trends and breakdowns for weekly and daily alcohol consumption are updated and presented in this chapter. For weekly consumption, categories are based on the revised guidelines; hence all weekly consumption category figures for men, going back to 2003, have been revised. Figures for mean consumption are presented for drinkers only.

1.1.4 Comparability with other UK statistics

The Health Surveys for England and Northern Ireland and the National Survey for Wales all provide estimates for alcohol consumption. A report published by the Government Statistical Service in 2015 advised that alcohol estimates across the UK were 'not comparable' at that time[33]. While questions are similar in each of the surveys, questions on alcohol consumption were delivered through self-completion in the Welsh Health Survey prior to 2015/16, complicating comparisons. These questions are now included in the National Survey for Wales which is delivered face-to-face; the same mode of collection as SHeS. However, categorisation of drinkers and non-drinkers is also inconsistent across the surveys and further differences exist in the way some alcoholic drinks are categorised. On these bases, no attempt is made to compare alcohol estimates from SHeS to those from other surveys.

1.2 METHODS AND DEFINITIONS

1.2.1 Methods

Questions about drinking alcohol have been included in SHeS since its inception in 1995. Questions are asked either face-to-face via the interviewer or included in the self-completion questionnaire if they are deemed too sensitive for a face-to-face interview. All those aged 16-17 years are asked about their consumption via the self-completion, as are some of those aged 18-19 years, at the interviewers' discretion. The way in which alcohol consumption is estimated in the survey was changed significantly in 2008. A detailed discussion of those revisions can be found in the chapter on alcohol consumption in the 2008 report[34].

In 2016, the SHeS questionnaire covered the following aspects of alcohol consumption:

- usual weekly consumption,
- daily consumption on the heaviest drinking day in the previous week.

Weekly consumption

Participants (aged 16 years and over) were asked preliminary questions to determine whether they drank alcohol at all. For those who reported

that they drank, these were followed by further questions on how often during the past 12 months they had drunk each of six different types of alcoholic drink:

- normal beer, lager, stout, cider and shandy
- strong beer, lager, stout and cider
- sherry and martini
- spirits and liqueurs
- wine
- alcoholic soft drinks (alcopops)

From these questions, the average number of days per week the participant had drunk each type of drink was estimated. A follow-up question asked how much of each drink type they had usually drunk on each occasion. These data were converted into units of alcohol (see Section 1.2.2) and multiplied by the amount they said they usually drank on any one day[35].

Daily consumption

Participants were asked about drinking in the week preceding the interview, with actual consumption on the heaviest drinking day in that week then examined in more detail[36]. Details on the amounts consumed for each of the six types of drink listed in the weekly consumption section above were collected and converted into units of alcohol consumed.

1.2.2 Calculating alcohol consumption in SHeS

The guidelines on lower risk drinking are expressed in terms of units of alcohol consumed. As discussed above, detailed information on both the volume of alcohol drunk in a typical week and on the heaviest drinking day in the week preceding the survey was collected from participants. The volumes reported were not validated. In the UK, a standard unit of alcohol is 10 millilitres or around 8 grams of ethanol. In this chapter, alcohol consumption is reported in terms of units of alcohol.

Questions on the quantity of wine drunk were revised in 2008. Since then, participants reporting drinking any wine have been asked what size of glass they drank from: large (250ml), medium (175ml) and small (125ml). In addition, to help participants make more accurate judgements they are also shown a showcard depicting glasses with 125ml, 175ml and 250ml of liquid. Participants also had the option of specifying the quantity of wine drunk in bottles or fractions of a bottle; with a bottle treated as the equivalent of six small (125ml) glasses. There are numerous challenges associated with calculating units at a population level, not least of which are the variability of alcohol strengths and the fact that these have changed over time. Table 4A below outlines how the volumes of alcohol reported in the survey were converted into units (the 2008 report provides full information about how this process has changed over time) [34]. Those who drank bottled or

canned beer, lager, stout or cider were asked in detail about what they drank, and this information was used to estimate the amount in pints.

1.2.3 Age-standardised estimates for weekly alcohol consumption

The area deprivation data presented for weekly alcohol consumption are presented in Scottish index of Multiple Deprivation (SIMD) quintiles. To ensure that the comparisons presented are not confounded by the different age profiles of the quintiles, the data have been age-standardised. Readers should refer to the Glossary at the end of this Volume for a detailed description of SIMD and age-standardisation.

Table 1A Alcohol unit conversion factors

Type of drink	Volume reported	Unit conversion factor
Normal strength beer, lager, stout, cider, shandy (less than 6% ABV)	Half pint	1.0
	Can or bottle	Amount in pints multiplied by 2.5
	Small can (size unknown)	1.5
	Large can / bottle (size unknown)	2.0
Strong beer, lager, stout, cider, shandy (6% ABV or more)	Half pint	2.0
	Can or bottle	Amount in pints multiplied by 4
	Small can (size unknown)	2.0
	Large can / bottle (size unknown)	3.0
Wine	250ml glass	3.0
	175ml glass	2.0
	125ml glass	1.5
	750ml bottle	1.5 x 6
Sherry, vermouth and other fortified wines	Glass	1.0
Spirits	Glass (single measure)	1.0
Alcopops	Small can or bottle	1.5
	Large (700ml) bottle	3.5

1.2.4 Definitions

The UK alcohol guidelines consist of three recommendations:

- A weekly guideline on regular drinking;
- Advice on single episodes of drinking; and
- A guideline on pregnancy and drinking.

According to the weekly guideline, you are safest not to regularly drink more than 14 units per week, to keep health risks from drinking alcohol to a low level. This applies to both men and women. If you do drink as much as 14 units a week, it is best to spread this evenly over three days or more. On a single episode of drinking, advice is to limit the total

amount drunk on any occasion, drink more slowly, drink with food and alternate with water. The guideline on drinking and pregnancy, or planning a pregnancy, advises that the safest approach is not to drink alcohol at all[24].

Consumption of more than three units (women) or four units (men) on a single day is also reported in this chapter. This allows comparison with previous SHeS reports although these volumes of alcohol are no longer included in the most recent guidance from the UK Chief Medical Officers. Consumption of double this amount (six units for women and eight for men) is also reported.

1.3 USUAL WEEKLY ALCOHOL CONSUMPTION

1.3.1 Trends in usual weekly alcohol consumption since 2003

Table 1.1 presents trends from 2003 to 2016 in self-reported usual weekly alcohol consumption by sex for adults aged 16 and over. The estimated mean number of units of alcohol consumed per week declined significantly for male drinkers from 21.8 units in 2003 to 15.7 units in 2013 and has remained relatively static since (between 15.9 units and 17.2 units during 2014 to 2016; Figure 1A, Table 1.1). The trend among women has followed a similar pattern: female drinkers' consumption decreased from 10.6 units per week in 2003 to 8.6 units in 2013 and was at a similar level (8.8 units) in 2016. Taking men and women drinkers together, the estimated mean number of units of alcohol consumed per week fell from 16.1 units in 2003 to 12.2 units in 2013 and has subsequently stayed at similar levels (12.8 in 2016).

The estimated usual weekly alcohol consumption level groupings are based on the revised guidelines for all years. Moderate weekly alcohol consumption is defined as no more than 14 units for both men and women, with those exceeding this amount classified as hazardous or harmful drinkers. As shown in Table 1.1, the trend in hazardous or harmful drinking levels for men showed a significant decline from 47% in 2003 to 34% in 2013 and has remained at a similar level during 2014 to 2016 (between 35% and 36%). Comparable trends were seen for women: the prevalence of hazardous or harmful drinking levels for women was 23% in 2003, 16% in 2013, and 17% during 2014 to 2016). For all adult drinkers aged 16 and over, reported hazardous or harmful drinking declined significantly from 2003 (34%) to 2013 (25%) but has stayed at similar levels since (25%in 2014 and 26% in 2015 and 2016).

Significant increases in the proportions of adults saying they did not drink alcohol were seen for both men and women over the period spanning 2003 to 2016. For men, prevalence of non-drinking rose from 8% in 2003 to 14% in 2014 and 2015, and dropped to 13% in 2016. Of women, 13% reported being non-drinkers in both 2003 and 2008, this rose to 18- 20% during 2013 to 2016. For all adults aged 16 and over, the percentage reporting they did not drink alcohol increased

significantly from 11% in 2003 to 16% in 2013, and has remained at this level up to 2016. **Figure 1A, Figure 1B, Table 1.1**

Figure 1A
Mean units of alcohol consumed per week among adults, 2003-2016, by sex

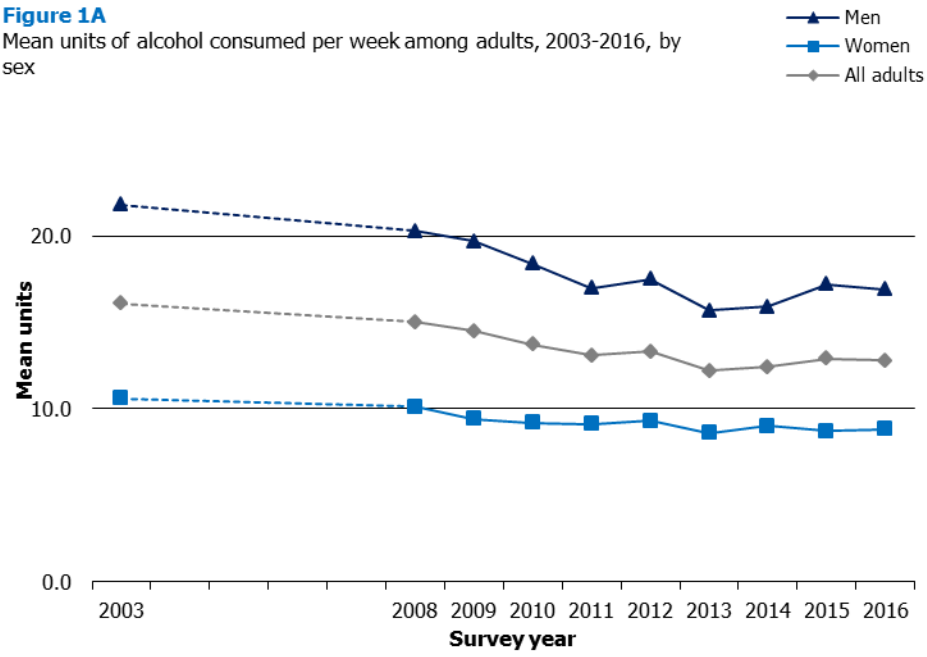
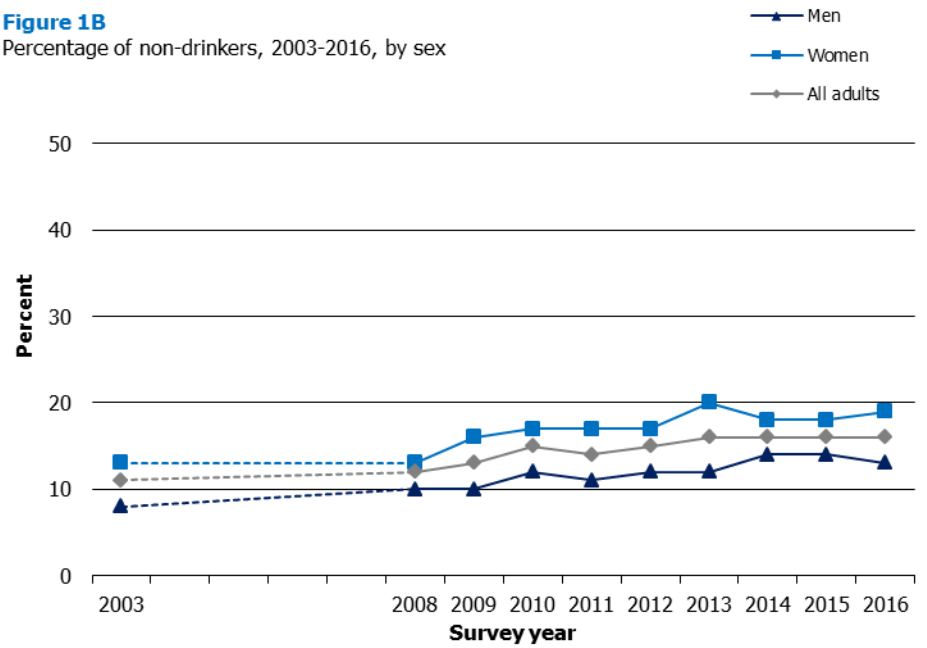


Figure 1B
Percentage of non-drinkers, 2003-2016, by sex



1.3.2 Usual weekly alcohol consumption in 2016, by age and sex

As in previous survey years, [37] the mean number of units of alcohol usually consumed per week was around twice as high for men (16.9 units) as for women (8.8 units) in 2016. The volume of alcohol consumed on a weekly basis varied by age group with similar patterns for men and women. Those aged 55-64 and the youngest age group (those aged 16-24) consumed the most (20.7 and 18.4 units on

average, respectively for men and 10.8 and 11.3 units on average, respectively for women); the oldest age group consumed the least (12.8 units for men and 4.8 units for women).

In 2016, age-related patterns in hazardous / harmful drinking differed by sex. For men, prevalence increased with age from 32% among those aged 16-24 to 40% among those aged 55-64; the lowest prevalence was seen in those aged 75 and over (20%). For women, the highest prevalence occurred in those aged 16-24 (25%) and those aged 55-64 (23%); similarly to men, the lowest prevalence was seen in those aged 75 and over (5%).

The prevalence of non-drinking also varied significantly by age, with the lowest prevalence at 11% among those aged 16-24 (11% for men and 10% for women) and the highest prevalence at 35% among those aged 75 and over (26% for men and 41% for women). **Table 1.2**

1.3.3 Usual weekly alcohol consumption in 2016, by area deprivation

The age-standardised mean units of alcohol consumed per week by drinkers in 2016 did not vary significantly by area deprivation; however patterns differed by sex. Among women, those from the least deprived quintile areas had the highest age-standardised weekly consumption (9.7 units) and those from the most deprived quintile areas had the lowest (7.5 units; Table 1.3). Among men, the pattern was slightly less clear but appeared to be the reverse of that for women: those in the least (14.5 units) and second (13.4 units) least deprived quintiles had lower consumption relative to the remaining quintiles (17.1 units to 20.6 units).

The age-standardised mean units of alcohol consumed per week by hazardous / harmful drinkers varied significantly by area deprivation in 2016. Mean units of alcohol consumed per week by hazardous / harmful drinkers was lowest in the least and second least deprived quintiles (28.8 units and 26.8 units respectively) and higher in the three most deprived quintiles (between 31.9 units and 37.2 units with the highest mean in the most deprived area). Similar patterns were found for men and women.

Table 1.3 also presents the estimated usual weekly alcohol consumption level groupings (non-drinker, moderate and harmful/hazardous drinker) by deprivation in 2016. There was a significant association between area deprivation and the consumption level categories. Patterns were particularly pronounced for women; their age-standardised prevalence of hazardous / harmful drinking declined from 20% of those in the two less deprived quintiles to 18% of those in the third and second more deprived quintiles and 11% of those in the most deprived quintile. For men, the picture was less clear: age-standardised levels of hazardous / harmful drinking were similar among the two less deprived quintiles (32-34%) and the two most deprived quintiles (30-36%) with significantly higher level among the middle area deprivation quintile (42%).

The associations between area deprivation and age-standardised non-drinking prevalence were obvious among adults in 2016 with the lowest percentage in the least deprived areas (11%) followed by a stepped increase to 26% in the most deprived area. This pattern was largely driven by women with the age-standardised percentage of women not drinking alcohol being 13% for those living in the least deprived quintile, rising steadily across the quintiles to 32% for those living in the most deprived quintile. Among men, the age-standardised non-drinking prevalence was 10-11% for those living in the less deprived three quintiles compared with 16% to 18% for those living in the more deprived two quintiles.

Prevalence of moderate drinking declined as deprivation increased (62% for the two least deprived quintiles compared to 58-55% in the three most deprived quintiles) with similar patterns for both men and women. **Table 1.3**

1.4 ALCOHOL CONSUMPTION ON THE HEAVIEST DRINKING DAY IN LAST WEEK

1.4.1 Trends since 2003 in alcohol consumption on the heaviest drinking day in last week

As shown in Table 1.4, the percentage of men drinking more than four units on their heaviest drinking day declined significantly from 2003 (45%) to 2013 (40%) and has settled at a similar level since (39% in 2016). The percentage of women drinking more than three units on their heaviest drinking day declined significantly from 2003 (37%) to 2012 (30%); since then, levels have been between 31-33%.

The percentage of men drinking more than eight units on their heaviest drinking day also declined significantly from 2003 (29%) to 2013 (24%) but has stayed at similar levels since (26% in 2015 and 24% in 2016). The trend for women drinking more than six units on their heaviest drinking day showed a significant decline from 19% in 2003 to 15% in 2012; levels have been 14-17% since then.

For all adults, the estimated mean number of units of alcohol consumed on the heaviest drinking day fell from 7.7 units in 2003 to 6.9 units in 2013, and remained at a similar level since then (7.3 units in 2016). The estimated mean number of units of alcohol consumed on heaviest drinking day for male drinkers aged 16 and over fell overall from 9.0 units in 2003 to 8.0 units in 2013. Subsequently, the mean has not changed significantly (8.3 units in 2016). The estimated mean for female drinkers aged 16 years and over fell significantly from 6.2 units in 2003 to 5.6 units in 2012 and 2013 and has risen since to 6.1 units in 2016. While this increase was not statistically significant, it may require further monitoring as it may indicate an upward trend. **Table 1.4**

1.4.2 Alcohol consumption on the heaviest drinking day in last week for 2015/2016 combined

Mean units of alcohol consumed on the heaviest drinking day in the last week for 2015/2016 combined were lower with increasing age (from 10.8 units for those aged 16-24 to 3.1 for those aged 75 and over) with similar patterns for both men and women.

Male drinkers drank significantly more alcohol on their heaviest drinking day than female drinkers (8.4 units and 5.9 units on average, respectively), with higher levels seen on average for men than women at each individual age group. The mean number of units consumed on the heaviest drinking day was 12.1 for male drinkers aged 16-24 compared with 3.6 units for male drinkers aged 75 and over; the corresponding figures for female drinkers were 9.3 units and 2.5 units, respectively.

As in previous survey years[37,] in 2015/2016 combined the overall percentage of men drinking more than four units on their heaviest drinking day was higher than the percentage of women drinking more than three units. This occurred both at a total level (40% and 32%, respectively) and among all age groups, see Figure 1C and Figure 1D. The percentage having at least double these numbers of units on their heaviest drinking day was also higher among men (25%) than women (15%).

Exceeding three / four units and six / eight units on the heaviest drinking day was systematically less common for the older age groups. This pattern was more pronounced for the percentage of those drinking over six or eight units (from 29% of those aged 16-24 to 2 % of those aged 75 and over) see Figure 1C, Figure 1D, Table 1.5. This pattern was evident among both men and women.

As shown in Figure 1D more than four units being consumed on the heaviest drinking day was most prevalent among men aged 16-64 (between 42% and 47%), and least prevalent among those aged 65-74 and 75 and over (35% and 14% respectively). A similar pattern was seen for women with more than three units being consumed on the heaviest drinking day by those aged 16-64 (between 36% and 39%), whereas the figures were lower for those aged 65-74 (22%) and 75 and over (7%). The percentage of men consuming more than eight units on the heaviest drinking day was higher for those aged 16-64 (between 26% and 33%) and lower for those aged 65-74 and those aged 75 and older (15% and 4% respectively). The percentage of women consuming more than six units on their heaviest drinking day was also higher for those aged 16-64 (between 13% and 26%) and lower for those aged 65-74 and 75 and older (5% and 1% respectively).

Figure 1C, Figure 1D, Table 1.5

Figure 1C
Units consumed on heaviest drinking day, 2015/2016, by age (Men)

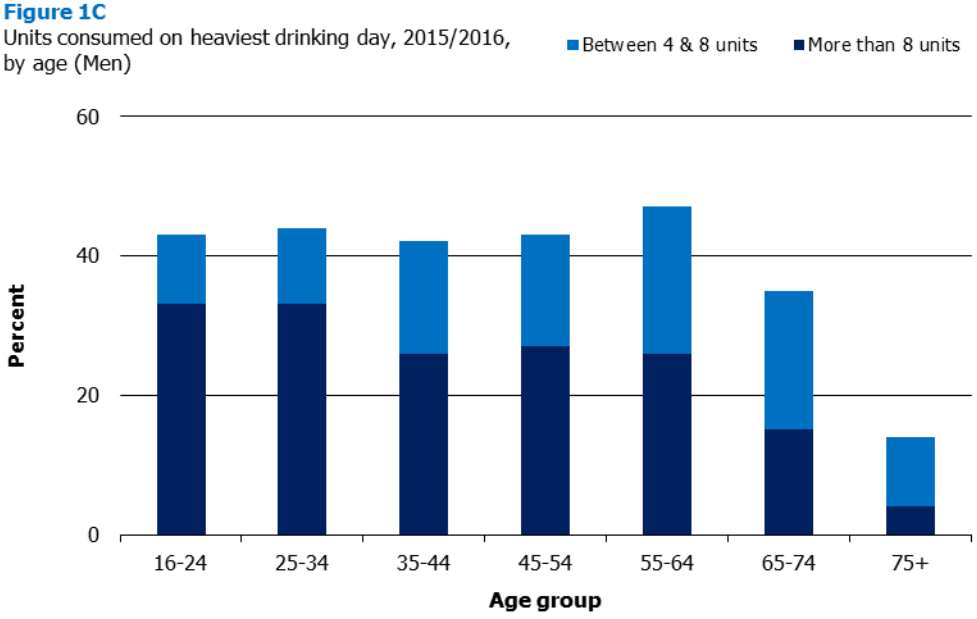
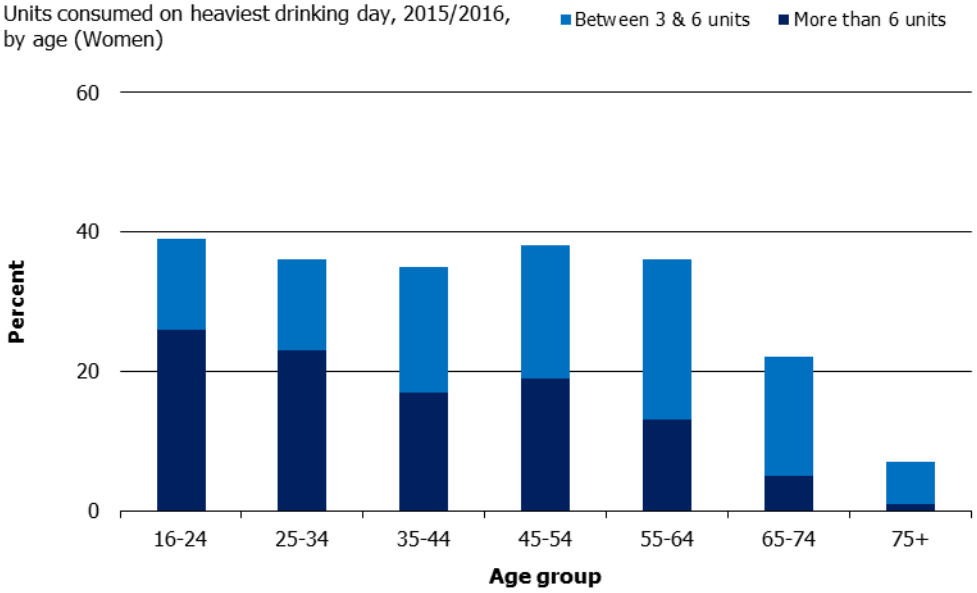


Figure 1D
Units consumed on heaviest drinking day, 2015/2016, by age (Women)



1.5 NUMBER OF DAYS ON WHICH DRANK ALCOHOL IN THE PAST WEEK

1.5.1 Trends since 2003 in the number of days on which adults drank alcohol in the past week

The mean number of days on which adults drank alcohol in the past week has remained stable since 2003, fluctuating between 2.6 and 3 days over the survey years with similarly stable trends for both men and women.

For all adults the percentage drinking alcohol on more than five days in the week prior to interview decreased significantly from 17% in 2003 to 10% in 2014, rising to 13% in 2016. Similarly, among men the

percentage declined significantly from 20% in 2003 to 11% in 2014; it has since risen to 14% in 2015 and most recently 15% in 2016. Similar patterns were seen for women with a decrease from 13% in 2003 to 8% in 2014 and 2015; the level was 10% in 2016. **Table 1.6**

1.5.2 The number of days on which adults drank alcohol in the past week for 2015/2016 combined

As in previous years[37], in 2015/2016 combined, the mean number of days on which alcohol was consumed increased with age (from 2.1-2.2 mean days for those aged 16-34 to 3.7 mean days for those aged 75 and over). This was true for both men and women (2.3- 2.4 days for male drinkers aged 16-34 to 4.0 for those aged 75 and over, and 2.0 days and 3.4 days respectively for women). Adults aged 75 and over had the highest number of days on which alcohol was consumed in the past week and the lowest weekly consumption levels. In combination, the data in tables 1.2, 1.5 and 1.7 suggest that older drinkers consume less at one time but with greater frequency, while younger drinkers tend to consume a greater volume of alcohol in fewer drinking sessions.

As reported for previous surveys[37] in 2015/2016 male drinkers consumed alcohol on more days per week than female drinkers (2.9 days compared with 2.4 days). The average number of days that alcohol was consumed was between 0.4 and 0.6 days higher for men than women for each age group.

Male drinkers had a significantly higher prevalence than female drinkers of drinking alcohol on more than five days in the past week (15% and 9% respectively) in 2015/2016 combined. Drinking on five days or more increased for male drinkers from 6% for those aged 16-24 to 37% for those aged 75 and over. A slightly different pattern emerged for women, with the lowest prevalence being among those aged 25-34 (1%) rising to 27% for those aged 75 and over. Prevalence for drinking on five days or more was the same for women as for men at 6%. **Table 1.7**

1.5.3 The number of days on which adults drank alcohol in the past week, by area deprivation for 2015/2016 combined

There was a significant negative association between the age-standardised mean number of days on which alcohol was drunk in the week prior to interview and area deprivation for both men and women for 2015/2016: the greater the deprivation, the fewer the days on which alcohol was consumed (2.9 mean days for the least deprived quintile compared to 2.3 mean days for the most deprived quintile). A similar pattern was found for both men and women with 3.0 mean days (men) and 2.7 mean days (women) in the least deprived quintile areas compared with 2.5 mean days (men) and 2.0 mean days (women) in the most deprived quintile areas.

The age-standardised percentage of women drinking alcohol on more than five days in the week prior to interview in 2015/2016 followed a similar pattern across area deprivation quintiles (12% in the least

deprived quintile areas and 6% in the most deprived quintile areas) but the picture for men was less clear. **Table 1.8**

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[35] For participants aged 16 and 17, details on alcohol consumption were collected as part of a special smoking and drinking self-completion questionnaire. Some aged 18 and 19 also completed the self-completion if the interviewer felt it was appropriate. For all other adult participants, the information was collected as part of the face-to-face interview. The method of estimating consumption follows that originally developed for use in the General Household Survey and is also used in the Health Survey for England. For six types of alcoholic drink (normal strength beer/lager/cider/shandy, strong beer/lager/cider, spirits/liqueurs, fortified wines, wine, and alcoholic soft drinks), participants were asked about how often they had drunk each one in the past twelve months, and how much they had usually drunk on any one day. The amount given to the latter question was converted into units of alcohol, with a unit equal to half a pint of normal strength beer/lager/cider/alcoholic soft drink, a single measure of spirits, one glass of wine, or one small glass of fortified wine. A half pint of strong beer/lager/cider was equal to 1.5 units. The number of units was then multiplied by the frequency to give an estimate of weekly consumption of each type of drink. The frequency multipliers were:

Drinking frequency	Multiplying factor
Almost every day	7.0
5 or 6 times a week	5.5
3 or 4 times a week	3.5
Once or twice a week	1.5
Once or twice a month	0.375
One every couple months	0.115
Once or twice a year	0.029

The separate consumption figures for each type of drink were rounded to two decimal places and then added together to give an overall weekly consumption figure.

[36] Participants were first asked if they had drunk alcohol in the past seven days. If they had, they were asked on how many days and, if on more than one, whether they had drunk the same amount on each day or more on one day than others. If they had drunk more on one day than others, they were asked how much they drank on that day. If they had drunk the same on several days, they were asked how much they drank on the most recent of those days. If they had drunk on only one day, they were asked how much they had drunk on that day.

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Table list

Table 1.1 Estimated usual weekly alcohol consumption level, 2003 to 2016

Aged 16 and over *2003 - 2016*

Alcohol units per week	2003	2008	2009	2010	2011	2012	2013	2014	2015	2016
	%	%	%	%	%	%	%	%	%	%
Men										
Estimated usual weekly alcohol consumption level[a]										
Non-drinker	8	10	10	12	11	12	12	14	14	13
Moderate	45	45	49	48	51	50	53	51	51	53
Hazardous / Harmful	47	44	41	39	38	38	34	35	36	35
Mean units per week[b]	21.8	20.3	19.7	18.4	17.0	17.5	15.7	15.9	17.2	16.9
SE of the mean	0.66	0.61	0.84	0.55	0.45	0.67	0.52	0.48	0.69	0.80
Women										
Estimated usual weekly alcohol consumption level[a]										
Non-drinker	13	13	16	17	17	17	20	18	18	19
Moderate	64	67	66	65	65	65	64	65	66	63
Hazardous / Harmful	23	20	18	18	18	18	16	17	17	17
Mean units per week[b]	10.6	10.1	9.4	9.2	9.1	9.3	8.6	9.0	8.7	8.8
SE of the mean	0.35	0.38	0.28	0.27	0.27	0.39	0.30	0.39	0.30	0.37
All adults										
Estimated usual weekly alcohol consumption level[a]										
Non-drinker	11	12	13	15	14	15	16	16	16	16
Moderate	55	57	58	57	58	57	59	59	58	58
Hazardous / Harmful	34	32	29	28	28	28	25	25	26	26
Mean units per week[b]	16.1	15.0	14.5	13.7	13.1	13.3	12.2	12.4	12.9	12.8
SE of the mean	0.39	0.38	0.47	0.33	0.30	0.40	0.33	0.35	0.39	0.47
Bases (weighted):										
Men	*3791*	*3011*	*3572*	*3388*	*3551*	*2253*	*2303*	*2171*	*2350*	*2031*
Male drinkers	*3437*	*2673*	*3168*	*2953*	*3131*	*1963*	*2005*	*1844*	*2003*	*1744*
Women	*4215*	*3317*	*3906*	*3711*	*3874*	*2464*	*2501*	*2389*	*2564*	*2199*
Female drinkers	*3578*	*2831*	*3241*	*3047*	*3164*	*2022*	*1963*	*1951*	*2077*	*1736*
All adults	*8006*	*6329*	*7478*	*7098*	*7425*	*4717*	*4805*	*4560*	*4914*	*4230*
All drinkers	*7015*	*5504*	*6409*	*6000*	*6294*	*3985*	*3968*	*3795*	*4080*	*3480*
Bases (unweighted):										
Men	*3558*	*2796*	*3272*	*3064*	*3239*	*2095*	*2108*	*2028*	*2212*	*1869*
Male drinkers	*3218*	*2463*	*2876*	*2654*	*2842*	*1794*	*1815*	*1737*	*1856*	*1587*
Women	*4482*	*3578*	*4227*	*4076*	*4220*	*2657*	*2724*	*2564*	*2723*	*2395*
Female drinkers	*3791*	*3033*	*3481*	*3297*	*3415*	*2153*	*2144*	*2063*	*2156*	*1889*
All adults	*8040*	*6374*	*7499*	*7140*	*7459*	*4752*	*4832*	*4592*	*4935*	*4264*
All drinkers	*7009*	*5496*	*6357*	*5951*	*6257*	*3947*	*3959*	*3800*	*4012*	*3476*

a Non-drinker: no units per week; Moderate: >0 units and up to 14 units; Hazardous/harmful: more than 14 units. Figures for men / all adults have been revised for 2003 to 2014 in line with these new guidelines

b Those who had consumed alcohol in the past year

Table 1.2 Estimated usual weekly alcohol consumption level, 2016, by age and sex

Aged 16 and over *2016*

Alcohol units per week	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Estimated usual weekly alcohol consumption level[a]								
Non-drinker	11	8	8	12	13	15	26	13
Moderate	57	59	55	50	47	47	54	53
Hazardous / Harmful	32	33	37	38	40	38	20	35
Mean units per week[b]	18.4	13.5	15.8	17.6	20.7	17.6	12.8	16.9
SE of the mean	4.00	1.95	1.69	1.42	1.67	1.30	1.55	0.80
Women								
Estimated usual weekly alcohol consumption level[a]								
Non-drinker	10	16	17	17	15	27	41	19
Moderate	65	71	64	66	62	59	53	63
Hazardous / Harmful	25	13	19	18	23	14	5	17
Mean units per week[b]	11.3	7.4	8.6	8.7	10.8	8.0	4.8	8.8
SE of the mean	1.42	0.72	0.83	0.68	0.83	0.70	0.68	0.37
All adults								
Estimated usual weekly alcohol consumption level[a]								
Non-drinker	11	12	13	14	14	22	35	16
Moderate	61	65	60	58	55	53	54	58
Hazardous / Harmful	29	23	28	27	31	25	11	26
Mean units per week[b]	14.9	10.5	12.3	13.1	15.7	12.9	8.6	12.8
SE of the mean	2.24	1.09	1.01	0.82	0.99	0.82	0.89	0.47

Continued…

Table 1.2 - *Continued*

Aged 16 and over *2016*

Alcohol units per week	**Age**							**Total**
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
Bases (weighted):								
Men	*267*	*323*	*318*	*377*	*324*	*255*	*167*	*2031*
Male drinkers	*225*	*297*	*287*	*325*	*276*	*212*	*122*	*1744*
Women	*254*	*344*	*336*	*407*	*340*	*281*	*236*	*2199*
Female drinkers	*220*	*286*	*278*	*334*	*285*	*200*	*134*	*1736*
All adults	*521*	*667*	*654*	*783*	*665*	*536*	*403*	*4230*
All drinkers	*445*	*583*	*565*	*659*	*561*	*412*	*256*	*3480*
Bases (unweighted):								
Men	*157*	*206*	*264*	*339*	*358*	*337*	*208*	*1869*
Male drinkers	*134*	*187*	*239*	*296*	*303*	*277*	*151*	*1587*
Women	*179*	*318*	*346*	*439*	*429*	*400*	*284*	*2395*
Female drinkers	*153*	*266*	*296*	*369*	*362*	*285*	*158*	*1889*
All adults	*336*	*524*	*610*	*778*	*787*	*737*	*492*	*4264*
All drinkers	*287*	*453*	*535*	*665*	*665*	*562*	*309*	*3476*

a Non-drinker: no units per week; Moderate: >0 units and up to 14 units; Hazardous / harmful: more than 14 units
b Those who had consumed alcohol in the past year

Table 1.3 Estimated usual weekly alcohol consumption level (age-standardised), 2016, by area deprivation and sex

Aged 16 and over *2016*

Alcohol units per week	Scottish Index of Multiple Deprivation				
	5th (Least deprived)	4th	3rd	2nd	1st (Most deprived)
	%	%	%	%	%
Men					
Estimated usual weekly alcohol consumption level[a]					
Non-drinker	10	11	10	16	18
Moderate	56	58	49	49	52
Hazardous / Harmful	34	32	42	36	30
Mean units per week (drinkers)[b]	14.5	13.4	20.6	17.1	18.5
SE of the mean	1.03	0.94	2.09	1.75	2.11
Mean units per week (hazardous / harmful drinkers)[c]	30.2	28.1	38.3	33.8	41.2
SE of the mean	1.59	1.25	4.21	2.96	4.00
Women					
Estimated usual weekly alcohol consumption level[a]					
Non-drinker	13	14	16	21	32
Moderate	67	66	66	62	57
Hazardous / Harmful	20	20	18	18	11
Mean units per week (drinkers)[b]	9.7	8.8	9.0	8.8	7.5
SE of the mean	0.62	0.78	0.71	1.16	0.74
Mean units per week (hazardous / harmful drinkers)[c]	26.5	24.6	27.3	28.5	[28.5]
SE of the mean	1.55	1.48	1.81	2.59	2.08

Continued…

Table 1.3 - *Continued*

Aged 16 and over *2016*

Alcohol units per week	Scottish Index of Multiple Deprivation				
	5th (Least deprived)	4th	3rd	2nd	1st (Most deprived)
	%	%	%	%	%
All adults					
Estimated usual weekly alcohol consumption level[a]					
Non-drinker	11	13	13	18	26
Moderate	62	62	58	56	55
Hazardous / Harmful	27	26	30	26	19
Mean units per week (drinkers)[b]	12.0	11.2	14.9	12.8	13.0
SE of the mean	0.69	0.72	1.22	1.11	1.23
Mean units per week (hazardous / harmful drinkers)[c]	28.8	26.8	34.9	31.9	37.2
SE of the mean	1.11	0.98	3.09	2.10	2.89
Bases (weighted):					
Men	*432*	*386*	*437*	*377*	*398*
Male drinkers	*385*	*342*	*391*	*309*	*312*
Male hazardous / harmful drinkers	*148*	*122*	*181*	*135*	*118*
Women	*462*	*377*	*446*	*426*	*490*
Female drinkers	*397*	*318*	*373*	*332*	*318*
Female hazardous / harmful drinkers	*94*	*75*	*79*	*75*	*54*
All adults	*894*	*763*	*882*	*803*	*887*
All drinkers	*783*	*660*	*764*	*641*	*630*
All hazardous / harmful drinkers	*242*	*197*	*261*	*210*	*172*
Bases (unweighted):					
Men	*417*	*421*	*425*	*318*	*288*
Male drinkers	*368*	*365*	*365*	*257*	*232*
Male hazardous / harmful drinkers	*143*	*138*	*150*	*107*	*93*
Women	*503*	*499*	*544*	*434*	*415*
Female drinkers	*428*	*414*	*432*	*330*	*285*
Female hazardous / harmful drinkers	*102*	*90*	*81*	*60*	*48*
All adults	*920*	*920*	*969*	*752*	*703*
All drinkers	*796*	*779*	*797*	*587*	*517*
All hazardous / harmful drinkers	*245*	*228*	*231*	*167*	*141*

a Non-drinker: no units per week; Moderate: >0 units and up to 14 units; Hazardous / harmful: more than 14 units

b Those who had consumed alcohol in the past year

c Those who drank an average of more than 14 units per week over the past year

Table 1.4 Estimated units consumed on heaviest drinking day, 2003 to 2016

Aged 16 and over *2003 - 2016*

Alcohol units per day	2003	2008	2009	2010	2011	2012	2013	2014	2015	2016
	%	%	%	%	%	%	%	%	%	%
Men										
Units consumed on heaviest drinking day (HDD)										
Consumed over 4 units on HDD	45	44	44	43	41	42	40	41	41	39
Consumed over 8 units on HDD	29	27	26	26	25	25	25	24	26	24
Mean units on HDD[a]	9.0	8.9	8.5	9.0	8.3	8.3	8.0	8.5	8.6	8.3
SE of the mean	0.21	0.25	0.21	0.27	0.20	0.27	0.26	0.27	0.29	0.27
Women										
Units consumed on heaviest drinking day (HDD)										
Consumed over 3 units on HDD	37	36	34	33	34	30	31	33	32	32
Consumed over 6 units on HDD	19	18	17	16	17	15	15	16	14	17
Mean units on HDD[a]	6.2	6.0	5.7	5.7	5.8	5.6	5.6	5.8	5.7	6.1
SE of the mean	0.14	0.21	0.14	0.14	0.12	0.16	0.15	0.23	0.26	0.28
All adults										
Units consumed on heaviest drinking day (HDD)										
Consumed over 3 / 4 units on HDD	41	40	39	38	37	36	35	37	36	36
Consumed over 6 / 8 units on HDD	24	22	21	21	20	20	19	20	20	20
Mean units on HDD[a]	7.7	7.6	7.2	7.4	7.1	7.1	6.9	7.2	7.2	7.3
SE of the mean	0.14	0.17	0.15	0.17	0.13	0.18	0.17	0.19	0.22	0.21
Bases (weighted):										
Men	*3819*	*3015*	*3521*	*3386*	*3549*	*2264*	*2267*	*2137*	*2299*	*2012*
Male drinkers	*2742*	*2093*	*2453*	*2259*	*2362*	*1522*	*1474*	*1366*	*1462*	*1286*
Women	*4254*	*3320*	*3865*	*3710*	*3860*	*2460*	*2498*	*2379*	*2541*	*2197*
Female drinkers	*2453*	*1915*	*2152*	*2022*	*2096*	*1251*	*1248*	*1265*	*1329*	*1117*
All adults	*8073*	*6335*	*7385*	*7096*	*7409*	*4724*	*4765*	*4517*	*4841*	*4209*
All drinkers	*5194*	*4008*	*4605*	*4281*	*4459*	*2773*	*2722*	*2630*	*2791*	*2402*
Bases (unweighted):										
Men	*3580*	*2801*	*3244*	*3066*	*3242*	*2104*	*2081*	*2001*	*2170*	*1839*
Male drinkers	*2576*	*1922*	*2242*	*2025*	*2150*	*1389*	*1342*	*1290*	*1362*	*1170*
Women	*4507*	*3579*	*4202*	*4083*	*4217*	*2659*	*2721*	*2552*	*2706*	*2391*
Female drinkers	*2596*	*2021*	*2317*	*2168*	*2222*	*1339*	*1329*	*1327*	*1376*	*1198*
All adults	*8087*	*6380*	*7446*	*7149*	*7459*	*4763*	*4802*	*4553*	*4876*	*4230*
All drinkers	*5172*	*3943*	*4559*	*4193*	*4372*	*2728*	*2671*	*2617*	*2738*	*2368*

a Those who had consumed alcohol in the past week

Table 1.5 Units consumed on heaviest drinking day, 2015/2016 combined, by age and sex

Aged 16 and over *2015/2016 combined*

Alcohol units per day	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Units consumed on heaviest drinking day (HDD)								
Consumed over 4 units on HDD	43	44	42	43	47	35	14	40
Consumed over 8 units on HDD	33	33	26	27	26	15	4	25
Mean units on HDD[a]	12.1	10.1	8.4	8.6	8.3	5.9	3.6	8.4
SE of the mean	0.84	0.48	0.41	0.40	0.32	0.22	0.19	0.20
Women								
Units consumed on heaviest drinking day (HDD)								
Consumed over 3 units on HDD	39	36	35	38	36	22	7	32
Consumed over 6 units on HDD	26	23	17	19	13	5	1	15
Mean units on HDD[a]	9.3	7.4	6.0	5.9	4.8	3.7	2.5	5.9
SE of the mean	1.11	0.47	0.27	0.21	0.16	0.14	0.12	0.18
All adults								
Units consumed on heaviest drinking day (HDD)								
Consumed over 3 / 4 units on HDD	41	40	38	40	41	28	10	36
Consumed over 6 / 8 units on HDD	29	27	21	23	19	9	2	20
Mean units on HDD[a]	10.8	8.9	7.3	7.3	6.6	4.9	3.1	7.2
SE of the mean	0.67	0.37	0.26	0.25	0.20	0.15	0.12	0.15

Continued…

Table 1.5 - *Continued*

Aged 16 and over *2015/2016 combined*

Alcohol units per day	**Age**							**Total**
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
Bases (weighted):								
Men	*562*	*698*	*653*	*799*	*689*	*554*	*363*	*4318*
Male drinkers	*317*	*453*	*422*	*529*	*469*	*371*	*194*	*2754*
Women	*546*	*755*	*699*	*872*	*739*	*619*	*505*	*4734*
Female drinkers	*288*	*383*	*371*	*503*	*444*	*290*	*161*	*2441*
All adults	*1108*	*1453*	*1351*	*1672*	*1428*	*1174*	*867*	*9052*
All drinkers	*605*	*837*	*793*	*1032*	*913*	*661*	*355*	*5195*
Bases (unweighted):								
Men	*336*	*431*	*558*	*723*	*749*	*726*	*486*	*4009*
Male drinkers	*187*	*275*	*358*	*478*	*499*	*474*	*261*	*2532*
Women	*378*	*658*	*725*	*919*	*911*	*861*	*645*	*5097*
Female drinkers	*186*	*321*	*386*	*533*	*545*	*403*	*200*	*2574*
All adults	*714*	*1089*	*1283*	*1642*	*1660*	*1587*	*1131*	*9106*
All drinkers	*373*	*596*	*744*	*1011*	*1044*	*877*	*461*	*5106*

a Those who had consumed alcohol in the past week

Table 1.6 Number of days on which adults drank alcohol in the past week, 2003 to 2016

Aged 16 and over and drank alcohol in past week *2003 - 2016*

% who drank on >5 days / mean number of days drank alcohol in last week[a]	2003	2008	2009	2010	2011	2012	2013	2014	2015	2016
	%	%	%	%	%	%	%	%	%	%
Men										
Number of days on which drank alcohol in the past week[a]										
Drank on >5 days	20	17	14	15	13	13	12	11	14	15
Mean number of days	3.3	3.1	2.9	2.9	2.8	2.8	2.8	2.7	2.8	2.9
SE of the mean	0.05	0.05	0.04	0.05	0.05	0.06	0.06	0.06	0.06	0.07
Women										
Number of days on which drank alcohol in the past week[a]										
Drank on >5 days	13	10	9	10	10	10	9	8	8	10
Mean number of days	2.7	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.3	2.5
SE of the mean	0.05	0.05	0.04	0.04	0.05	0.06	0.05	0.05	0.05	0.08
All adults										
Number of days on which drank alcohol in the past week[a]										
Drank on >5 days	17	14	11	13	12	12	11	10	11	13
Mean number of days	3.0	2.8	2.7	2.7	2.7	2.7	2.6	2.6	2.6	2.7
SE of the mean	0.04	0.04	0.03	0.04	0.04	0.05	0.04	0.05	0.05	0.06
Bases (weighted):										
Men	*2762*	*2160*	*2497*	*2307*	*2406*	*1551*	*1538*	*1437*	*1537*	*1330*
Women	*2472*	*1953*	*2199*	*2070*	*2152*	*1283*	*1285*	*1301*	*1370*	*1143*
All adults	*5234*	*4113*	*4696*	*4377*	*4557*	*2834*	*2823*	*2738*	*2907*	*2473*
Bases (unweighted):										
Men	*2590*	*1967*	*2266*	*2057*	*2174*	*1405*	*1392*	*1346*	*1421*	*1214*
Women	*2609*	*2053*	*2346*	*2200*	*2256*	*1361*	*1354*	*1360*	*1410*	*1222*
All adults	*5199*	*4020*	*4612*	*4257*	*4430*	*2766*	*2746*	*2706*	*2831*	*2436*

a Of those who drank alcohol in the last week

Table 1.7 Number of days on which adults drank alcohol in the past week, 2015/2016 combined, by age and sex

Aged 16 and over and drank alcohol in past week *2015/2016 combined*

% who drank on >5 days / mean number of days drank alcohol in last week[a]	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Number of days on which drank alcohol in the past week[a]								
Drank on >5 days	6	7	9	14	17	26	37	15
Mean number of days	2.4	2.3	2.5	2.8	3.2	3.5	4.0	2.9
SE of the mean	0.16	0.11	0.11	0.10	0.10	0.11	0.16	0.05
Women								
Number of days on which drank alcohol in the past week[a]								
Drank on >5 days	6	1	4	8	11	19	27	9
Mean number of days	2.0	1.8	2.1	2.4	2.7	3.0	3.4	2.4
SE of the mean	0.20	0.07	0.08	0.08	0.09	0.12	0.17	0.04
All adults								
Number of days on which drank alcohol in the past week[a]								
Drank on >5 days	6	5	7	11	14	23	33	12
Mean number of days	2.2	2.1	2.3	2.6	3.0	3.3	3.7	2.7
SE of the mean	0.13	0.08	0.07	0.07	0.07	0.09	0.13	0.04
Bases (weighted):								
Men	*339*	*486*	*440*	*550*	*485*	*377*	*197*	*2873*
Women	*316*	*396*	*383*	*510*	*450*	*290*	*161*	*2507*
All adults	*656*	*881*	*823*	*1060*	*935*	*667*	*358*	*5380*
Bases (unweighted):								
Men	*201*	*294*	*376*	*499*	*518*	*484*	*263*	*2635*
Women	*205*	*333*	*399*	*540*	*552*	*403*	*200*	*2632*
All adults	*406*	*627*	*775*	*1039*	*1070*	*887*	*463*	*5267*

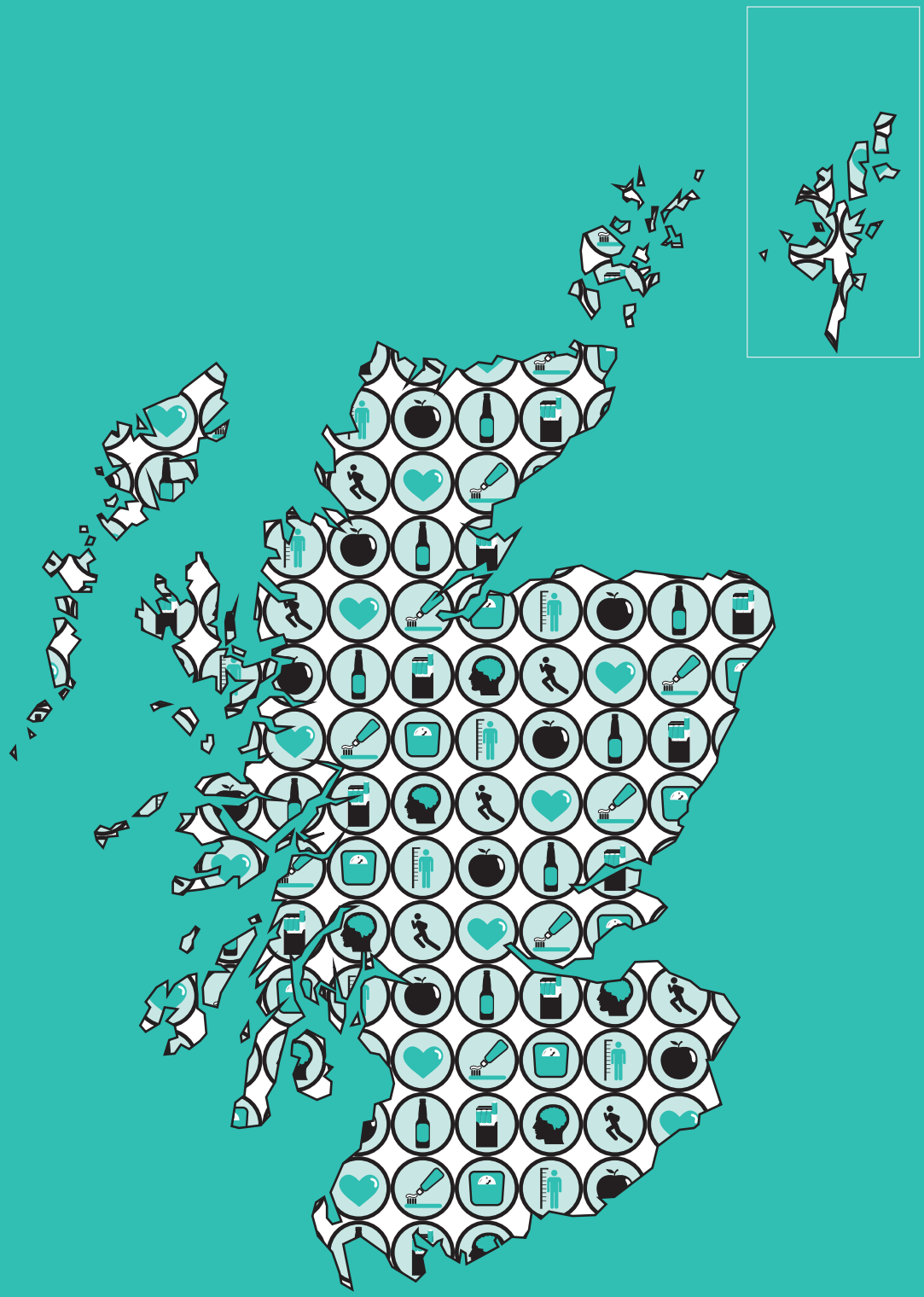
a Of those who drank alcohol in the last week

Table 1.8 Number of days on which adults drank alcohol in the past week (age-standardised), 2015/2016 combined, by area deprivation and sex

Aged 16 and over and drank alcohol in past week *2015/2016 combined*

% who drank on >5 days / mean number of days drank alcohol in last week[a]	Scottish Index of Multiple Deprivation				
	5th (Least deprived)	4th	3rd	2nd	1st (Most deprived)
	%	%	%	%	%
Men					
Number of days on which drank alcohol in the past week[a]					
Drank on >5 days	14	17	13	15	13
Mean number of days	3.0	3.0	2.9	2.8	2.5
SE of the mean	0.09	0.10	0.10	0.10	0.11
Women					
Number of days on which drank alcohol in the past week[a]					
Drank on >5 days	12	11	7	7	6
Mean number of days	2.7	2.5	2.4	2.3	2.0
SE of the mean	0.12	0.09	0.08	0.09	0.09
All adults					
Number of days on which drank alcohol in the past week[a]					
Drank on >5 days	13	14	11	11	10
Mean number of days	2.9	2.8	2.6	2.5	2.3
SE of the mean	0.08	0.08	0.08	0.08	0.08
Bases (weighted):					
Men	*620*	*607*	*604*	*551*	*489*
Women	*604*	*525*	*532*	*443*	*396*
All adults	*1224*	*1132*	*1136*	*993*	*885*
Bases (unweighted):					
Men	*571*	*608*	*596*	*471*	*389*
Women	*636*	*620*	*593*	*424*	*359*
All adults	*1207*	*1228*	*1189*	*895*	*748*

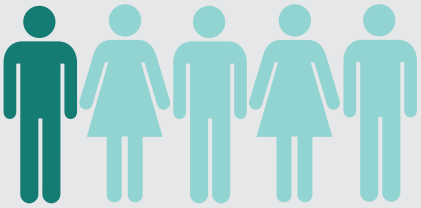
a Of those who drank alcohol in the last week



Chapter 2

Smoking

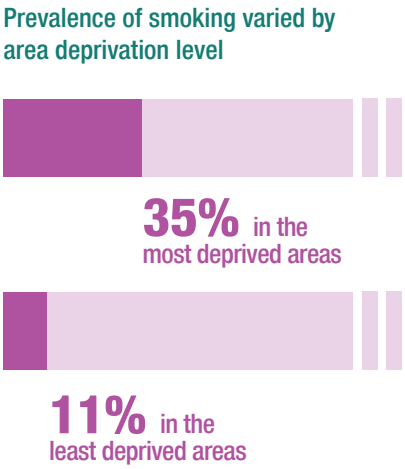
SUMMARY



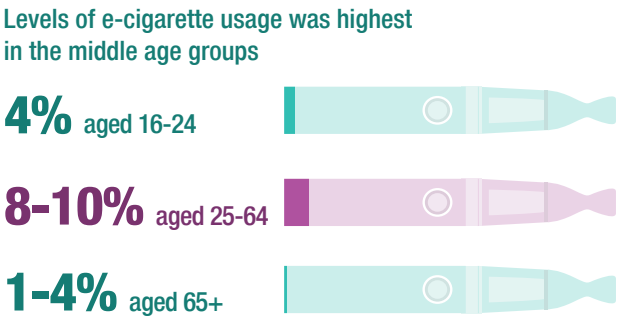
21%
of adults reported that they currently smoked cigarettes, down from 28% in 2003

- The mean number cigarettes smoked per day in 2016 was higher for male smokers (13.7 cigarettes) than for female smokers (11.7 cigarettes).

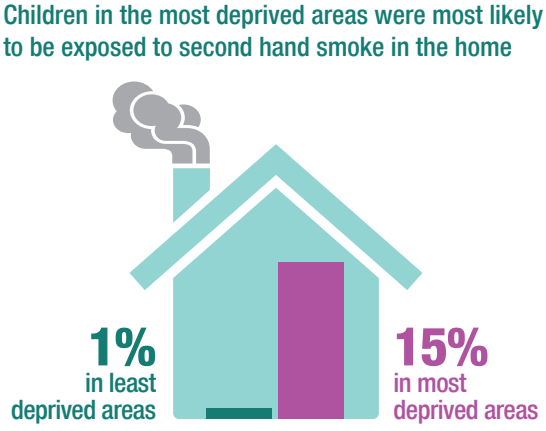
- Current smoking prevalence was highest among adults aged 25-54 (24-29%), however those in the 55-64 age group reported smoking the most cigarettes per day on average (15.1 cigarettes) of all adult age groups.
- Smokers were more likely to be a normal weight (BMI 18.5-less than 25) (39%) than ex-regular smokers (29%) or those who had never smoked (33%).
- The percentage of adults who had never or never regularly smoked was highest in the least deprived areas (65%; age-standardised for 2013-16 combined) and lowest in the most deprived areas (41%).



- Levels of current e-cigarette usage among adults had increased significantly from 5% in 2014 to 7% in 2015, and stayed at the same level in 2016.
- Current e-cigarette use was the same for men and women (7%) in 2016.



- Those living in the two least deprived area quintiles were the least likely to be exposed to second-hand smoke in their home or the homes of others (5-8%) and those in the most deprived quintile were the most likely (20%), (age standardised).
- Exposure of children to second-hand smoke in their home decreased from 11% in 2014 to 6% in 2015 and remained around this level in 2016 (7%).



2 SMOKING

Linsay Gray and Alastair H Leyland

2.1 INTRODUCTION

Nationally[1] and globally[2], tobacco use is the leading cause of premature mortality and preventable poor health. Tobacco use is associated with stillbirths and infant deaths, childhood respiratory diseases, and communicable as well as non-communicable diseases in adulthood[3]. Each year tobacco use costs over half a trillion dollars worldwide and kills around six million people[4]. More than five million of the deaths are caused by direct tobacco use while more than 600,000 are the consequence of non-smokers being exposed to second-hand smoke[5]. In Scotland alone, tobacco use is associated with around 10,000 deaths each year (around a fifth of all deaths)[6].

2.1.1 Policy background

Tobacco control policies have led to significant declines in adult smoking levels in Scotland in recent decades[7]. Several of the Scottish Government's National Indicators are relevant to smoking[8]. In addition to the specific indicator to reduce the proportion of adults who are current smokers (measured using SHeS data), there are more general related indicators on, for example, improving self-assessed general health, reducing premature mortality and reducing emergency admissions to hospital[9].

The **Tobacco Control Strategy**[10] lays out the Scottish Government's vision to create a 'tobacco-free generation' (defined as 'a smoking prevalence among the adult population of 5% or lower') by the year 2034. Actions arising from the strategy are structured around the themes of prevention, protection and cessation. Smoking cessation interventions, including pharmacotherapy, are among the most cost-effective health care interventions available[11].

The strategy sets out a number of key actions for local authorities and partners including full implementation of smoke-free policies for local authority grounds, working with COSLA, NHS Health Scotland published guidance in January 2018 to facilitate such action[12]. The NHS Local Delivery Plan (LDP) Standards require NHS Boards to sustain and embed successful smoking quits at twelve weeks post quit, in the 40% most deprived SIMD areas (60% in the Island Boards)[13].

The Health (Tobacco, Nicotine etc. and Care) (Scotland) Act 2016 was commenced on 1 April 2017. The Act includes provisions to regulate:

- the introduction of a minimum age of 18 for the sale of Nicotine Vapour Products (NVPs) – including electronic cigarettes.
- a ban on the purchase of NVPs on behalf of an under 18 – 'proxy purchase'.
- the introduction of mandatory registration for the sale of NVPs.

- bans on certain forms of domestic advertising and promotion of NVPs.
- the introduction of an age verification policy for sales of tobacco and NVPs by under 18s ('Challenge 25').
- a prohibition on the sale of NVPs from vending machines.
- a ban on unauthorised sales of tobacco and NVPs by under 18s.
- the introduction of statutory smoke-free perimeters around buildings on NHS hospital sites.

Regulation on the first four of these provisions came into force on 1 April 2017. Regulations on the other provisions will follow later in 2017.

The most recent passed Scottish Parliament legislation is the Smoking Prohibition (Children in Motor Vehicles) (Scotland) Act 2016 which deems as an offence smoking in cars in a public place in the presence of children[14].

All across the UK new regulations came into force on 21 May 2017 making it an offence to sell cigarettes in any pack containing less than 20 cigarettes, and ensuring all cigarettes are sold in standardised brand-neutral packs.

These new regulations also restricted the strength, availability and access to electronic cigarettes – banning cross-border advertising and promotion on, TV, radio, online, by e-mail and in print media.

2.1.2 Reporting on smoking in the Scottish Health Survey (SHeS)

Reliable data on smoking behaviour, cessation, Nicotine replacement therapy (NRT) use and exposure to second-hand smoke are vital to effective monitoring of trends relevant to the various targets in place. From 2014, SHeS has gathered information on the use of e-cigarettes among the Scottish adult population, in response to their increased availability and high profile.

This chapter presents figures for prevalence of cigarette smoking, e-cigarette use and non-smokers' and children's exposure to second-hand smoke. It also considers smoking prevalence by BMI. The area deprivation data presented for cigarette smoking are presented in Scottish Index of Multiple Deprivation (SIMD) quintiles. Where appropriate, to ensure that comparisons are not confounded by different age profiles within categories, data have been age-standardised. Readers should refer to the Glossary at the end of this Volume for a detailed description of SIMD, BMI and age-standardisation. Supplementary tables are also available on the Scottish Government SHeS website[15].

2.1.3 Comparability with other UK statistics

The Health Survey for England, Health Survey for Northern Ireland and the National Survey for Wales provide estimates of smoking prevalence in the other home nations within the UK. The surveys are conducted separately and have different sampling methodologies, so smoking prevalence estimates across the surveys are only partially comparable[16]. Smoking prevalence estimates from the UK-wide Integrated Household Survey for Scotland, Wales, England and Northern Ireland have been deemed to be fully comparable[17].

2.1.4 Adolescent smoking in Scotland

Smoking rates for 13 and 15 year olds are available from The Scottish Schools Adolescent Lifestyle and Substance Use Survey (SALSUS). This survey is conducted on a biennial basis, targeting secondary school pupils in local authority and independent schools[18].

2.2 METHODS AND DEFINITIONS

2.2.1 Methods of collecting data on smoking behaviour

Adults aged 20 and over were asked about their smoking behaviour during the face to face interview. For those aged 16 and 17, information was collected in a self-completion questionnaire offering more privacy and reducing the likelihood of concealing behaviour in front of other household members. At the interviewer's discretion those aged 18 and 19 could answer the questions either face to face or via the self-completion booklet.

2.2.2 Questions on smoking behaviour

Questions on smoking have been included in SHeS since 1995. Some small changes were made to the questions in 2008 and 2012. These are outlined in the relevant annual reports[19,20].

The current questions in the survey focus on:

- current smoking status
- frequency and pattern of current smoking
- the number of cigarettes smoked by current smokers
- ex-smokers' previous smoking history
- exposure to second-hand smoke
- past smoking behaviour
- quit attempts and desire to give up smoking
- medical advice on giving up smoking
- NRT use
- e-cigarette use (including as part of a quit attempt)

While the self-completion questions were largely similar to those asked in the face to face interview, the self-completion questionnaire did exclude questions on: past smoking behaviour, desire to give up smoking and medical advice to stop smoking.

2.2.3 Definitions

Cigarette smoking status

Information on cigar and pipe use is collected in the survey but as prevalence is low these are not considered in the definition of current smoking. Smoking status categories reported here are:

- current cigarette smoker
- ex-regular cigarette smoker
- never regular cigarette smoker
- never smoked cigarettes at all

Exposure to second-hand smoke

Exposure to second-hand smoke for adults and children is measured in two ways in the survey:

- whether there is someone who regularly smokes inside the accommodation where the child lives, and
- parents' and older children's (aged 13-15) reports of whether children are exposed to smoke at home.

2.3 CIGARETTE SMOKING STATUS

2.3.1 Trends in cigarette smoking status since 2003

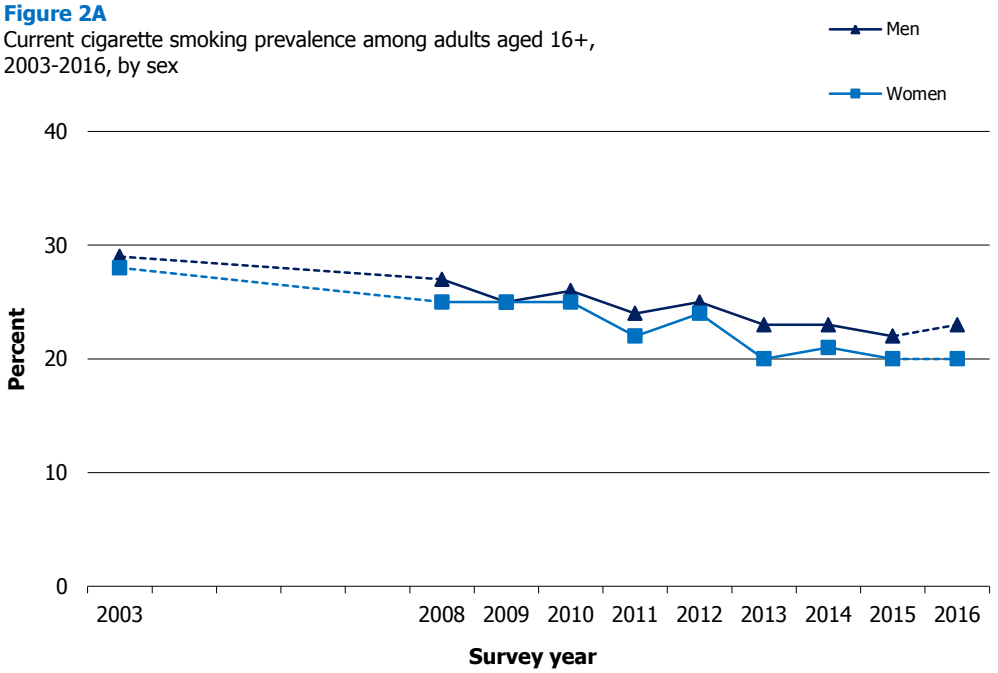
Current smoking prevalence for all adults (aged 16 and over) dropped significantly from 28% in 2003 to 21% in 2013; since then, the figures have remained almost static at 21-22% (21% in 2016). Figures for men and women indicate that both sexes have followed a similar pattern of downward trend and subsequent stabilising (see Figure 2A).

The percentage of adults who had never smoked regularly or had never smoked at all increased from 50% in 2003 to 55% in 2011. There has been no significant change in the time period since, with the proportion of adults who had never smoked ranging from 54-55% between 2012 and 2016. The percentage of all adults reporting that they were ex-regular smokers increased significantly overall between 2003 (22%) and 2016 (24%). The trends in those reporting that they had never smoked or were ex-regular smokers were similar for men and women.

Overall, there was a significant fall over time in the mean number of cigarettes smoked per day by current adult smokers: the mean dropped from 15.3 cigarettes in 2003 to 12.6 in 2015 and remained around this level (12.7 cigarettes) in 2016. The decrease was seen for both male

smokers (15.9 cigarettes per day in 2003 to 13.7 in 2015) and female smokers (14.7 cigarettes and 11.7, respectively). **Figure 2A, Table 2.1**

Figure 2A
Current cigarette smoking prevalence among adults aged 16+, 2003-2016, by sex



2.3.2 Cigarette smoking status in 2016, by age and sex

Smoking prevalence among adults in 2016 was 21% in 2016. The remainder was comprised of 24% adults who used to smoke regularly and 55% who reported that they had never smoked (regularly or at all).

The three percentage point difference between the proportions of male and female smokers (23% and 20% respectively) was not significant. However men were significantly less likely than women to have never smoked / or never been regular smokers (52% among men and 58% among women).

As seen in previous years,[21] there were significant differences in smoking prevalence between age groups in 2016. Smoking prevalence was highest among adults aged 25-54 (24-29%), lower among those aged 16-24 (21%) and those aged 55-74 (14-21%), and lowest among those aged 75 and over (7%). Men and women exhibited similar patterns for smoking prevalence by age, as shown in Figure 2B, Figure 2C and Table 2.2, with both having the lowest smoking prevalence among those aged 75 and over (4% for men, 10% for women).

The percentage of people who reported that they were ex-regular smokers in 2016 was lowest among the youngest age group (4% for those aged 16-24) and highest among the oldest adults (41% for those aged 75 and over). Those in the youngest age group were most likely to have never smoked regularly or at all (75% for those aged 16-24 compared with 59% of those aged 25-34 and 49-52% of those aged 35 and over). These patterns generally held for both men, as indicated in Figure 2B and Table 2.2, and women, as indicated in Figure 2C and

Table 2.2. However, in the two oldest age groups, women were more likely than men to have never smoked regularly or at all (56% compared with 41% for 65-75 year olds and 59% compared with 40% for 75 year olds and over). Also in the two oldest age groups, a lower percentage of women were ex-regular smokers than men (31% compared with 44% in the 65-74 age group and 31% compared with 56% in the over 75 age group).

In 2016 the overall mean number of cigarettes smoked per day by adult smokers was 12.7 cigarettes. The mean number of cigarettes smoked per day was higher for male smokers (13.7 cigarettes) than for female smokers (11.7 cigarettes). For all adults, men, and women, the highest mean number of cigarettes smoked per day was among the 55-64 age group (15.1, 15.9 and 14.2 respectively). Of all adult smokers, younger smokers (aged 16-44) smoked fewer cigarettes per day on average (between 10.4-11.4 cigarettes) than those aged 45-74 (between 12.7 and 15.1 cigarettes). This age-related pattern was most apparent among female smokers; among male smokers, consumption for the youngest age group was similar to that for those aged 45-74.

Figure 2B, Figure 2C, Table 2.2

Figure 2B
Cigarette smoking status, 2016, by age (Men)

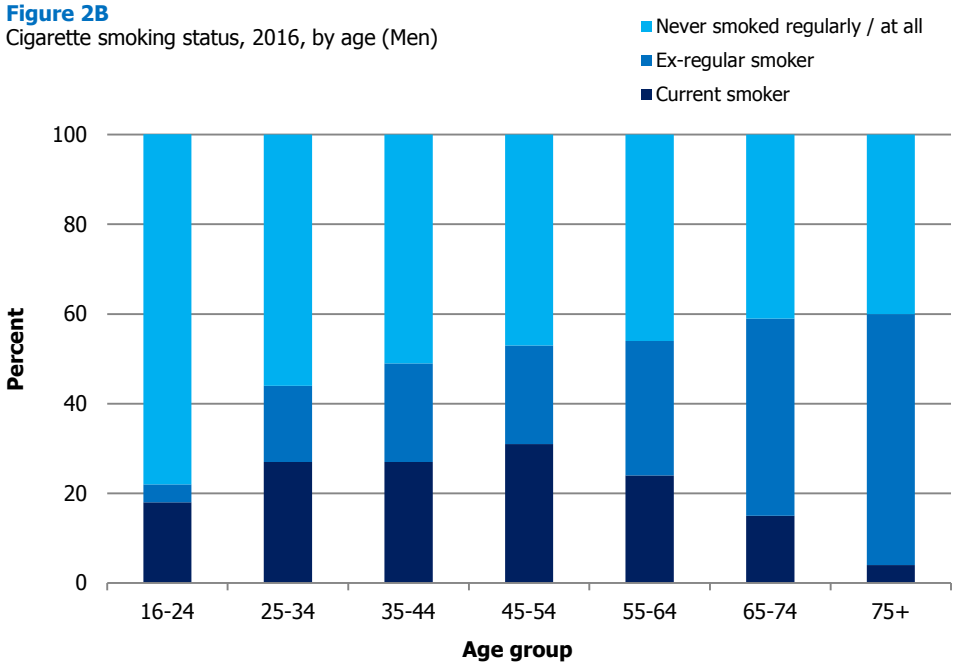
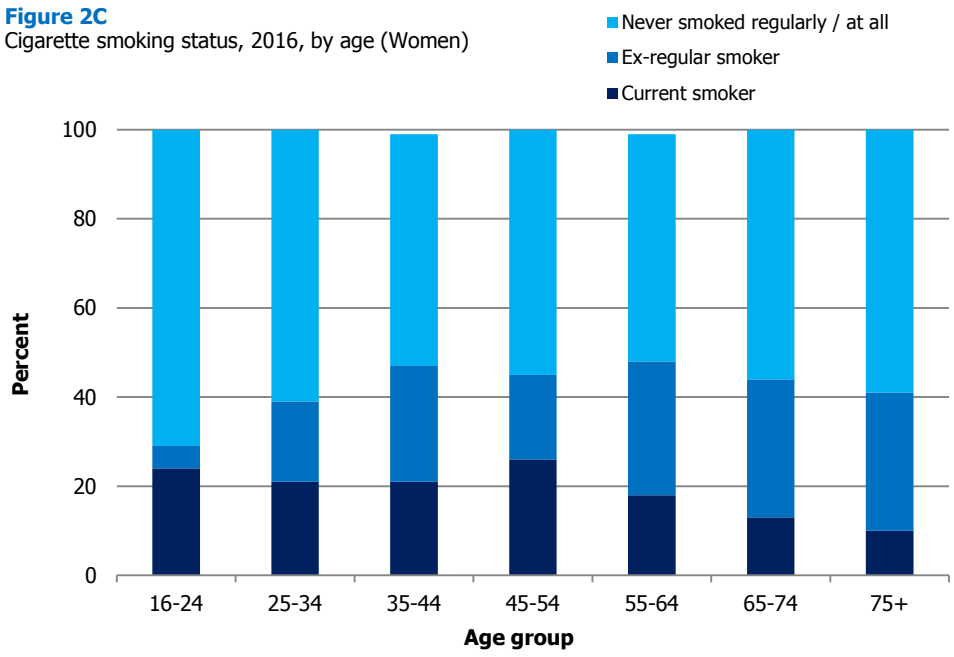


Figure 2C
Cigarette smoking status, 2016, by age (Women)



2.3.3 Cigarette smoking status by area deprivation (age-standardised), 2013-2016 combined

Adults living in more deprived areas were more likely to smoke than those in less deprived areas. The prevalence of smoking was 35% among those in the most deprived quintile areas compared with 11% among those in the least deprived quintile areas, with a step-decrease across the intermediate areas. The gradient was similar for men (38% in the most deprived areas compared with 12% in the least deprived areas) and women (33% in the most deprived areas compared with 10% in the least deprived areas).

Adults living in the least deprived areas were most likely to have never smoked or have never smoked regularly (65%) and those living in the most deprived quintile areas were least likely (41%), with step-decreases across the intermediate areas. This pattern held for both men and women.

There was a clear gradient in the numbers of cigarettes smoked by area deprivation with an average of 9.7 cigarettes smoked per day among smokers in the least deprived areas and 13.8 cigarettes smoked among those in the two most deprived quintile areas. The gradient was more pronounced among women, with a mean of 8.3 cigarettes smoked daily per current smoker living in the least deprived areas compared with 13.3 cigarettes smoked among those living in the most deprived areas. The corresponding numbers for male smokers were 11.0 cigarettes and 14.3 cigarettes, respectively.

There was no significant difference in the percentage of adults identifying as ex-regular smokers across area deprivation quintiles.

Figure 2D, Figure 2E, Table 2.3

Figure 2D
Age standardised cigarette smoking status, 2013-16 combined, by deprivation (Men)

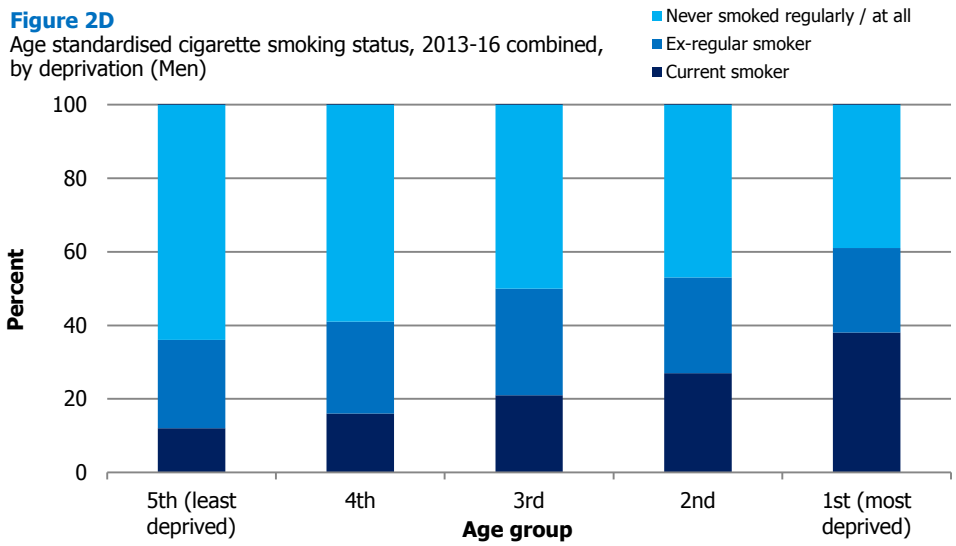
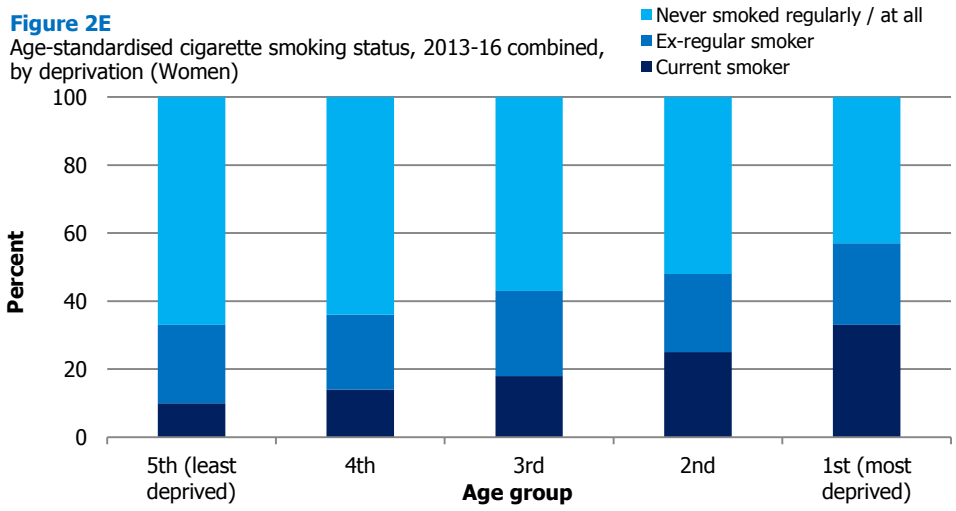


Figure 2E
Age-standardised cigarette smoking status, 2013-16 combined, by deprivation (Women)



2.3.4 Cigarette smoking status by BMI (age-standardised), 2013-2016 combined

Smokers were more likely to be a normal weight (39%) than ex-regular smokers (29%) or those who have never smoked regularly (33%). Prevalence of obesity showed the reverse pattern with prevalence highest for ex-regular smokers (33%) and lowest for current smokers (24%). Levels of overweight (excluding obese) were higher for ex-smokers and those who had never smoked regularly (both 37%) than for current smokers (34%). The percentage of adults underweight was highest for smokers (4%) compared to 1% for both ex-smokers and those who have never regularly smoked.

There were some differences between men and women. Obesity levels were significantly higher for female smokers (28%) than for male smokers (19%), whilst levels of overweight (excluding obese) showed the reverse (38% for men and 30% for women). Male ex-regular smokers were less likely to be of a normal weight (25%) than women (33%) and more likely to be overweight (excluding obese) (43%

compared to 32%). A similar difference was seen for those who were never regular smokers or had never smoked.

For those that currently smoke, the highest mean number of cigarettes smoked per day was among the under-weight group (18.2 cigarettes), though these results should be interpreted with some caution due to the small sample size for this group. The mean then dipped for those with healthy weight and those who were overweight (12.5% and 12.4% respectively). Then, for those in the obese category the mean number of cigarettes smoked per day was higher at 13.6. This pattern was more pronounced among men. **Table 2.4**

2.4 E-CIGARETTE USE

2.4.1 E-cigarette use in 2014 to 2016

In 2016, current e-cigarettes use among adults was 7%; 12% had previously used e-cigarettes and 81% had never used them.

The proportion of current e-cigarette users has not changed from 2015, but is significantly higher than in 2014 (5% in 2014 compared with 7% in both 2015 and 2016). Fewer adults reported having never used e-cigarettes in 2016 (81%) than in 2014 (85%). The difference from 2015 (83%) is not statistically significant. Significantly more people had previously used e-cigarettes in 2016 than in 2014 (12% compared with 10%).

Men and women were equally likely to be current users of e-cigarettes (7% for both men and women). However, men were more likely to have previously used e-cigarettes than women (13% compared with 10%) and more women than men had never used e-cigarettes (83% compared with 79%).

As in previous years,[21] e-cigarette use in 2016 varied significantly with age. The prevalence of e-cigarette use in 2016 was highest among the middle age groups (8-10% among those aged 25-64) and lower for the youngest (4% among individuals aged 16-24) and older adults (1-4% for those aged 65 and over). A similar age-related pattern was seen for both men and women.

Combined past and current usage was also associated with age in 2016. Of those aged 16-54, 22-25% had ever used e-cigarettes compared with 19% of those aged 54-65, 9% of those aged 65-74 and 4% of those aged 75 and over. For those aged 45-74, around half of those who had ever used e-cigarettes (9-22%) were still using them (4-10%). Around a fifth of adults aged 16-24 who had ever used e-cigarettes were currently using them (4% were current users compared with 22% that reported having ever used e-cigarettes). **Table 2.5**

2.5 EXPOSURE TO SECOND-HAND SMOKE

2.5.1 Trends in non-smokers' exposure to second-hand smoke

The percentage of non-smokers reporting being exposed to second-hand smoke in their own or other people's homes has dropped from 25% in 2003 to 12% in 2016, with similar trends for men and women. There was no significant difference in exposure to second-hand smoke in their own or other people's homes between men (11%) and women (12%) in 2016.

Data on second-hand smoke exposure in any public place in 2016 are only comparable with data collected since 2012 due to changes in definitions (see footnotes to Table 2.6). Under the definition used in recent years, the percentage of adult non-smokers exposed to second-hand smoke in any public place has not changed significantly since 2012, with percentages remaining between 16% and 18%. There was no significant difference between men and women non-smokers' exposure to second-hand smoke in any public place in 2016 (16% for men and 17% for women).

Non-smokers' were asked to state their exposure to second-hand smoke in their or other people's homes, at work, outside buildings, in cars / vans and in other public places, with these data being collected from 2012 onwards. In each of the 2012, 2013, and 2014 surveys 70% of non-smokers said they had not been exposed to smoke in any of these places; this rose significantly to 74% in 2015 and was 73% in 2016. **Table 2.6**

2.5.2 Non-smokers' exposure to second-hand smoke (age-standardised) by area deprivation in 2016

The percentage of non-smokers reporting being exposed to second-hand smoke in their own or other people's homes was significantly associated with deprivation (8% and 5% in the two least deprived area quintiles compared with 20% in the most deprived area quintile) with no significant difference between men and women.

There was no area deprivation gradient for the percentages of adult non-smokers exposed to second-hand smoke in any public place in 2016. This was the case for both men and women.

Table 2.7 provides the age-standardised percentages of adult non-smokers that said they had not been exposed to smoke in their or other people's homes, at work, outside buildings, in cars / vans or in other public places by area deprivation for 2016. The percentage that said they had not been exposed to smoke at any of these places differed significantly between the two most deprived area quintiles (64% and 69%) and the three least deprived area quintiles (75-79%), with similar trends and levels for men and women. **Table 2.7**

2.5.3 Children's exposure to second-hand smoke since 2012

In 2016, 11% of children lived in accommodation in which someone regularly smoked inside. There was a statistically significant difference by sex, with a higher percentage of boys affected (12% of boys and 9% of girls). There was no significant difference between the 2016 figure for all children and the 2015 figure of 12% although previously significant decreases were seen in the years between 2012 to 2015 (19% in 2012, 16% in 2013 and 2014, and 12% in 2015). Similar patterns were observed for both boys and girls.

A lower percentage of children (7% for both boys and girls) were reported to have been exposed to second-hand smoke in their home in 2016 than in 2012 (12%). The lowest percentage so far was in 2015 (6%).

The data indicate that the target to reduce the percentage of children exposed to smoke at home to 6% by 2020 was met in 2015. There has been a slight increase to 7% in 2016, although this change is not statistically significant. These figures (and the others in this section) will continue to be examined in future years to assess adherence to the target. **Table 2.8**

2.5.4 Children's exposure to second-hand smoke by area deprivation in 2016

There was a marked gradient by area deprivation for children who lived in accommodation in which someone smoked inside (from 3% for those living in the least deprived areas to 23% for those living in the most deprived areas). This deprivation gradient was equally pronounced for girls and boys.

Although the overall percentage of children reported to have been exposed to second-hand smoke at home in 2016 (7%) was close to the 2020 target of 6%, the percentage varied across area deprivation quintiles. For those living in the least deprived quintile areas, 1% of children were reported to be exposed to second-hand smoke in their home whereas the figure was 15% for those living in the most deprived quintile areas. There was a comparable statistically significant pattern for both boys and girls. **Table 2.9**

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Table list

Table 2.1 Cigarette smoking status, 2003 to 2016

Aged 16 and over *2003 - 2016*

Cigarette smoking status	2003	2008	2009	2010	2011	2012	2013	2014	2015	2016
	%	%	%	%	%	%	%	%	%	%
Men										
Current cigarette smoker[a]	29	27	25	26	24	25	23	23	22	23
Ex-regular cigarette smoker	24	24	24	24	23	23	25	23	27	25
Never regular cigarette smoker / never smoked at all	47	49	51	50	52	52	51	54	51	52
Mean per current smoker per day	15.9	15.7	15.4	14.8	14.3	14.7	13.5	13.5	13.9	13.7
Standard error of the mean	0.33	0.46	0.41	0.43	0.35	0.48	0.49	0.49	0.45	0.67
Women										
Current cigarette smoker[a]	28	25	25	25	22	24	20	21	20	20
Ex-regular cigarette smoker	20	22	20	21	20	21	23	23	23	23
Never regular cigarette smoker / never smoked at all	53	53	55	54	57	55	57	56	57	58
Mean per current smoker per day	14.7	13.7	13.4	13.1	13.3	12.4	12.4	13.0	11.3	11.7
Standard error of the mean	0.27	0.31	0.27	0.27	0.30	0.40	0.40	0.40	0.37	0.38
All adults										
Current cigarette smoker[a]	28	26	25	25	23	25	21	22	21	21
Ex-regular cigarette smoker	22	23	22	23	22	22	24	23	25	24
Never regular cigarette smoker / never smoked at all	50	51	53	52	55	54	54	55	54	55
Mean per current smoker per day	15.3	14.7	14.4	13.9	13.8	13.5	13.0	13.2	12.6	12.7
Standard error of the mean	0.24	0.28	0.26	0.26	0.26	0.34	0.34	0.34	0.31	0.39

Continued…

Table 2.1 - *Continued*

Aged 16 and over *2003 to 2016*

Cigarette smoking status	2003	2008	2009	2010	2011	2012	2013	2014	2015	2016
Bases (weighted):										
Men	*3819*	*3066*	*3560*	*3422*	*3581*	*2292*	*2330*	*2207*	*2374*	*2054*
Women	*4267*	*3348*	*3905*	*3750*	*3906*	*2489*	*2534*	*2416*	*2580*	*2227*
All adults	*8086*	*6413*	*7465*	*7173*	*7487*	*4780*	*4864*	*4623*	*4954*	*4281*
Bases (unweighted):										
Men	*3582*	*2829*	*3265*	*3092*	*3263*	*2119*	*2131*	*2057*	*2228*	*1882*
Women	*4514*	*3600*	*4227*	*4109*	*4243*	*2677*	*2746*	*2585*	*2740*	*2416*
All adults	*8096*	*6429*	*7492*	*7201*	*7506*	*4796*	*4877*	*4642*	*4968*	*4298*

a Current cigarette smoker excludes those who reported only smoking cigars or pipes

Table 2.2 Cigarette smoking status, 2016, by age and sex

Aged 16 and over *2016*

Cigarette smoking status	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Current cigarette smoker[a]	18	27	27	31	24	15	4	23
Ex-regular cigarette smoker	4	17	22	22	30	44	56	25
Never regular cigarette smoker / never smoked at all	79	56	51	47	46	41	40	52
Mean per current smoker per day	*	11.3	11.9	15.2	15.9	[14.5]	*	13.7
Standard error of the mean	*	1.13	1.23	0.97	1.28	[1.02]	*	0.67
Women								
Current cigarette smoker[a]	24	21	21	26	18	13	10	20
Ex-regular cigarette smoker	5	18	26	19	30	31	31	23
Never regular cigarette smoker / never smoked at all	71	61	52	55	51	56	59	58
Mean per current smoker per day	[9.4]	9.4	9.7	13.9	14.2	[12.6]	*	11.7
Standard error of the mean	[0.99]	0.90	0.86	0.82	0.98	[0.95]	*	0.38
All adults								
Current cigarette smoker[a]	21	24	24	29	21	14	7	21
Ex-regular cigarette smoker	4	18	24	20	30	37	41	24
Never regular cigarette smoker / never smoked at all	75	59	52	51	49	49	51	55
Mean per current smoker per day	11.4	10.4	10.9	14.6	15.1	13.5	[12.7]	12.7
Standard error of the mean	1.44	0.80	0.77	0.65	0.81	0.74	[1.11]	0.39

Continued…

Table 2.2 - *Continued*

Aged 16 and over *2016*

Cigarette smoking status	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
Bases (weighted):								
Men	*276*	*333*	*320*	*378*	*325*	*255*	*167*	*2054*
Male smokers	*47*	*87*	*87*	*107*	*70*	*36*	*6*	*439*
Women	*275*	*348*	*338*	*407*	*341*	*281*	*236*	*2227*
Female smokers	*64*	*71*	*72*	*105*	*63*	*37*	*24*	*436*
All adults	*550*	*681*	*658*	*786*	*666*	*536*	*403*	*4281*
All smokers	*111*	*158*	*159*	*213*	*133*	*72*	*30*	*874*
Bases (unweighted):								
Men	*163*	*210*	*265*	*340*	*359*	*337*	*208*	*1882*
Male smokers	*27*	*53*	*68*	*91*	*78*	*48*	*6*	*371*
Women	*193*	*322*	*347*	*440*	*430*	*400*	*284*	*2416*
Female smokers	*44*	*67*	*72*	*99*	*79*	*47*	*26*	*434*
All adults	*356*	*532*	*612*	*780*	*789*	*737*	*492*	*4298*
All smokers	*71*	*120*	*140*	*190*	*157*	*95*	*32*	*805*

a Current cigarette smoker excludes those who reported only smoking cigars or pipes

Table 2.3 Cigarette smoking status (age-standardised), 2013-2016 combined, by area deprivation and sex

Aged 16 and over *2013-2016 combined*

Cigarette smoking status	Scottish Index of Multiple Deprivation				
	5th (Least deprived)	4th	3rd	2nd	1st (Most deprived)
	%	%	%	%	%
Men					
Current cigarette smoker[a]	12	16	21	27	38
Ex-regular cigarette smoker	24	25	29	26	23
Never regular cigarette smoker/ never smoked at all	64	59	50	47	39
Mean per current smoker per day	11.0	13.0	13.5	14.7	14.3
Standard error of the mean	0.91	0.68	0.49	0.51	0.43
Women					
Current cigarette smoker[a]	10	14	18	25	33
Ex-regular cigarette smoker	23	22	25	23	24
Never regular cigarette smoker/ never smoked at all	67	65	57	53	43
Mean per current smoker per day	8.3	11.3	11.6	13.0	13.3
Standard error of the mean	0.50	0.49	0.40	0.39	0.36
All adults					
Current cigarette smoker[a]	11	15	20	26	35
Ex-regular cigarette smoker	23	23	27	24	24
Never regular cigarette smoker/ never smoked at all	65	62	54	50	41
Mean per current smoker per day	9.7	12.2	12.5	13.8	13.8
Standard error of the mean	0.54	0.45	0.33	0.34	0.30
Bases (weighted):					
Men	*1901*	*1876*	*1698*	*1837*	*1662*
Male smokers	*226*	*295*	*350*	*473*	*592*
Women	*1940*	*1942*	*1917*	*2003*	*1948*
Female smokers	*200*	*270*	*347*	*491*	*625*
All adults	*3841*	*3818*	*3615*	*3840*	*3611*
All smokers	*426*	*566*	*698*	*963*	*1217*
Bases (unweighted):					
Men	*1622*	*1847*	*1870*	*1588*	*1371*
Male smokers	*175*	*282*	*376*	*407*	*492*
Women	*1962*	*2244*	*2394*	*2040*	*1847*
Female smokers	*201*	*295*	*424*	*503*	*584*
All adults	*3584*	*4091*	*4264*	*3628*	*3218*
All smokers	*376*	*577*	*800*	*910*	*1076*

a Current cigarette smoker excludes those who reported only smoking cigars or pipes

Table 2.4a Cigarette smoking status (age-standardised), 2013-2016 combined, by body mass index (BMI) and sex

Aged 16 and over *2013-2016 combined*

BMI	Cigarette smoking status		
	Current cigarette smoker	Ex-regular smoker	Never regular cigarette smoker / never smoked at all
	%	%	%
Men			
Under 18.5	3	0	1
18.5 to less than 25	40	25	28
25 to less than 30	38	43	42
30 and over	19	32	28
Women			
Under 18.5	4	1	1
18.5 to less than 25	38	33	38
25 to less than 30	30	32	33
30 and over	28	34	28
All adults			
Under 18.5	4	1	1
18.5 to less than 25	39	29	33
25 to less than 30	34	37	37
30 and over	24	33	28
Bases (weighted):			
Men	*1780*	*1899*	*4020*
Women	*1647*	*1796*	*4520*
All adults	*3427*	*3695*	*8540*
Bases (unweighted):			
Men	*1553*	*1971*	*3532*
Women	*1675*	*2086*	*4868*
All adults	*3228*	*4057*	*8400*

Table 2.4b Mean number of cigarettes smoked per current smoker per day (age-standardised), 2013-2016 combined, by body mass index (BMI) and sex

Aged 16 and over and current smoker *2013-2016 combined*

BMI	BMI			
	Under 18.5	18.5 to less than 25	25 to less than 30	30 and over
Men				
Mean per current smoker per day	[21.7]	13.7	12.9	14.9
Standard error of the mean	[3.23]	0.45	0.41	0.86
Women				
Mean per current smoker per day	14.8	11.2	11.8	12.7
Standard error of the mean	1.86	0.33	0.38	0.45
All adults				
Mean per current smoker per day	18.2	12.5	12.4	13.6
Standard error of the mean	1.91	0.29	0.29	0.45
Bases (weighted):				
Male smokers	*59*	*666*	*651*	*335*
Female smokers	*59*	*619*	*494*	*456*
All smokers	*118*	*1285*	*1145*	*791*
Bases (unweighted):				
Male smokers	*30*	*540*	*586*	*327*
Female smokers	*54*	*640*	*506*	*457*
All smokers	*84*	*1180*	*1092*	*784*

Table 2.5 E-cigarette use, 2014 to 2016, by age and sex

Aged 16 and over *2014, 2015, 2016*

E-cigarette use	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
2014								
Currently using	5	3	7	5	7	2	1	5
Ever previously used[a]	17	17	9	11	8	3	2	10
Never used	78	80	84	84	85	94	96	85
Ever used[b]	*22*	*20*	*16*	*16*	*15*	*6*	*4*	*15*
2015								
Currently using	6	9	6	9	8	3	2	6
Ever previously used[a]	22	20	13	10	8	4	2	12
Never used	72	71	81	82	85	93	96	82
Ever used[b]	*28*	*29*	*19*	*18*	*15*	*7*	*4*	*18*
2016[c]								
Currently using	3	11	9	9	9	4	1	7
Ever previously used[a]	21	19	17	13	11	5	1	13
Never used	77	70	74	78	80	91	98	79
Ever used[b]	*23*	*30*	*26*	*22*	*20*	*9*	*2*	*21*
Women								
2014								
Currently using	3	5	7	9	6	3	1	5
Ever previously used[a]	14	12	12	9	9	5	2	9
Never used	83	83	81	82	85	92	97	85
Ever used[b]	*17*	*17*	*19*	*18*	*15*	*8*	*3*	*15*
2015								
Currently using	2	7	9	10	9	5	2	7
Ever previously used[a]	15	16	11	9	8	6	2	10
Never used	83	77	80	82	83	88	96	83
Ever used[b]	*17*	*23*	*20*	*18*	*17*	*12*	*4*	*17*
2016[c]								
Currently using	5	8	7	10	8	5	2	7
Ever previously used[a]	16	12	14	12	9	5	3	10
Never used	79	80	79	78	82	90	95	83
Ever used[b]	*21*	*20*	*21*	*22*	*18*	*10*	*5*	*17*

Continued…

Table 2.5 - *Continued*

Aged 16 and over *2014, 2015, 2016*

E-cigarette use	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
All adults								
2014								
Currently using	4	4	7	7	6	3	1	5
Ever previously used[a]	16	14	11	10	8	4	2	10
Never used	80	81	82	83	85	93	97	85
Ever used[b]	*20*	*19*	*18*	*17*	*15*	*7*	*3*	*15*
2015								
Currently using	4	8	7	9	8	4	2	7
Ever previously used[a]	19	18	12	9	8	5	2	11
Never used	78	74	81	82	84	90	96	83
Ever used[b]	*22*	*26*	*19*	*18*	*16*	*10*	*4*	*17*
2016[c]								
Currently using	4	10	8	10	9	4	1	7
Ever previously used[a]	18	16	15	13	10	5	2	12
Never used	78	75	77	78	81	91	96	81
Ever used[b]	*22*	*25*	*23*	*22*	*19*	*9*	*4*	*19*
Bases (weighted):								
Men 2014	*292*	*356*	*357*	*416*	*347*	*264*	*173*	*2205*
Men 2015	*326*	*381*	*370*	*445*	*375*	*288*	*190*	*2376*
Men 2016	*277*	*334*	*320*	*378*	*325*	*255*	*167*	*2057*
Women 2014	*305*	*375*	*379*	*441*	*365*	*294*	*253*	*2412*
Women 2015	*319*	*405*	*397*	*471*	*394*	*321*	*273*	*2580*
Women 2016	*273*	*348*	*338*	*407*	*340*	*281*	*236*	*2225*
All adults 2014	*597*	*731*	*736*	*857*	*712*	*558*	*426*	*4617*
All adults 2015	*645*	*786*	*767*	*916*	*770*	*609*	*463*	*4956*
All adults 2016	*550*	*682*	*658*	*786*	*665*	*536*	*403*	*4281*
Bases (unweighted):								
Men 2014	*192*	*250*	*306*	*361*	*358*	*361*	*227*	*2055*
Men 2015	*186*	*239*	*312*	*404*	*410*	*399*	*280*	*2230*
Men 2016	*164*	*211*	*265*	*340*	*359*	*337*	*208*	*1884*
Women 2014	*224*	*337*	*421*	*431*	*437*	*419*	*313*	*2582*
Women 2015	*203*	*348*	*392*	*486*	*489*	*461*	*361*	*2740*
Women 2016	*191*	*322*	*347*	*440*	*429*	*400*	*284*	*2413*
All adults 2014	*416*	*587*	*727*	*792*	*795*	*780*	*540*	*4637*
All adults 2015	*389*	*587*	*704*	*890*	*899*	*860*	*641*	*4970*
All adults 2016	*355*	*533*	*612*	*780*	*788*	*737*	*492*	*4297*

a Excludes those who are currently using

b Includes those who are currently using

c the wording was amended slightly in 2016 to include 'vaping devices'

Table 2.6 Non-smokers' exposure to second-hand smoke, 2003 to 2016

Non-smokers aged 16 and over *2003 - 2016*

Exposure to second-hand smoke[a]	2003	2008	2009	2010	2011	2012	2013	2014	2015	2016
	%	%	%	%	%	%	%	%	%	%
Men										
In own home	14	10	9	8	8	7	6	8	4	6
In other people's home	15	11	9	10	9	10	9	8	8	6
At work	15	5	5	5	5	6	6	7	5	4
Outside buildings, e.g. pubs, shops, hospitals	n/a	n/a	n/a	n/a	n/a	11	14	14	12	13
In cars / vans	n/a	n/a	n/a	n/a	n/a	2	2	3	2	1
In other public places	25	6	5	6	7	7	7	7	8	8
In own or other's home	24	18	17	16	15	16	14	14	11	11
In any public place (2012 onwards)[b]	n/a	n/a	n/a	n/a	n/a	16	17	17	16	16
Not exposed to smoke in these places (2012 onwards)[c]	n/a	n/a	n/a	n/a	n/a	69	70	70	74	73
Women										
In own home	13	9	8	8	6	8	6	6	5	6
In other people's home	19	12	12	12	9	11	10	10	9	7
At work	8	2	3	2	2	3	3	3	2	3
Outside buildings, e.g. pubs, shops, hospitals	n/a	n/a	n/a	n/a	n/a	12	14	14	12	14
In cars / vans	n/a	n/a	n/a	n/a	n/a	2	1	1	2	1
In other public places	26	5	5	6	7	8	6	7	8	8
In own or other's home	27	19	18	18	14	17	15	15	14	12
In any public place (2012 onwards)[b]	n/a	n/a	n/a	n/a	n/a	16	17	18	16	17
Not exposed to smoke in these places (2012 onwards)[c]	n/a	n/a	n/a	n/a	n/a	70	71	70	74	72
All adults										
In own home	25	18	17	17	14	17	14	14	12	12
In any public place (2012 onwards)[b]	n/a	n/a	n/a	n/a	n/a	16	17	18	16	17
Not exposed to smoke in these places (2012 onwards)[c]	n/a	n/a	n/a	n/a	n/a	70	70	70	74	73

Continued…

Table 2.6 - *Continued*

Aged 16 and over *2003 to 2016*

Exposure to second-hand smoke[a]	2003	2008	2009	2010	2011	2012	2013	2014	2015	2016
Bases (weighted):										
Men	*2695*	*2137*	*2655*	*2524*	*2707*	*1709*	*1786*	*1707*	*1851*	*1590*
Women	*3088*	*2508*	*2941*	*2826*	*3029*	*1899*	*2033*	*1907*	*2065*	*1785*
All adults	*5783*	*4645*	*5596*	*5350*	*5736*	*3608*	*3819*	*3613*	*3916*	*3375*
Bases (unweighted):										
Men	*2576*	*2031*	*2466*	*2281*	*2482*	*1612*	*1611*	*1604*	*1758*	*1487*
Women	*3284*	*2724*	*3199*	*3089*	*3292*	*2080*	*2193*	*2061*	*2224*	*1976*
All adults	*5860*	*4755*	*5665*	*5370*	*5774*	*3692*	*3804*	*3665*	*3982*	*3463*

a Percentages add to more than 100% as the categories are not mutually exclusive
b Any public place defined as: outside buildings, or in any other public places
c These places defined as: in own home, other people's homes, in cars/vans, outside buildings, at work, or in other public places

Table 2.7 Non-smokers' exposure to second-hand smoke (age-standardised), 2016 by area deprivation and sex

Non-smokers aged 16 and over *2016*

Exposure to second-hand smoke	Scottish Index of Multiple Deprivation				
	5th (Least deprived)	4th	3rd	2nd	1st (Most deprived)
	%	%	%	%	%
Men					
In own home	5	4	4	8	11
In other people's home	3	4	5	10	12
At work	4	3	3	7	6
Outside buildings, e.g. pubs, shops, hospitals	13	11	13	13	14
In cars / vans	1	0	2	2	0
In other public places	10	8	9	8	4
In own or other's home	7	6	9	16	22
In any public place[b]	17	14	16	18	16
Not exposed to smoke in these places[c]	76	81	76	67	63
Women					
In own home	3	1	6	7	9
In other people's home	7	3	6	9	11
At work	3	3	4	5	3
Outside buildings, e.g. pubs, shops, hospitals	14	13	11	14	18
In cars / vans	2	1	1	1	2
In other public places	9	8	6	8	9
In own or other's home	9	5	12	16	19
In any public place[b]	17	17	13	17	22
Not exposed to smoke in these places[c]	74	77	75	71	65
All adults					
In own home	4	3	5	7	10
In other people's home	5	4	6	10	12
At work	3	3	4	6	4
Outside buildings, e.g. pubs, shops, hospitals	14	12	12	14	16
In cars / vans	1	1	1	1	1
In other public places	10	8	8	8	7
In own or other's home	8	5	11	16	20
In any public place[b]	17	15	14	18	20
Not exposed to smoke in these places[c]	75	79	76	69	64

Continued…

Table 2.7 - *Continued*

Non-smokers aged 16 and over *2016*

Exposure to second-hand smoke	Scottish Index of Multiple Deprivation				
	5th (Least deprived)	4th	3rd	2nd	1st (Most deprived)
Bases (weighted):					
Men	*387*	*323*	*348*	*265*	*264*
Women	*417*	*340*	*366*	*318*	*347*
All adults	*804*	*663*	*714*	*584*	*611*
Bases (unweighted):					
Men	*373*	*356*	*339*	*234*	*185*
Women	*456*	*450*	*449*	*326*	*295*
All adults	*829*	*806*	*788*	*560*	*480*

a Percentages add to more than 100% as the categories are not mutually exclusive

b Any public place defined as: outside buildings, or in any other public places

c These places defined as: in own home, other people's homes, in cars/vans, outside buildings, at work, or in other public places

Table 2.8 Children's exposure to second-hand smoke, 2012 to 2016

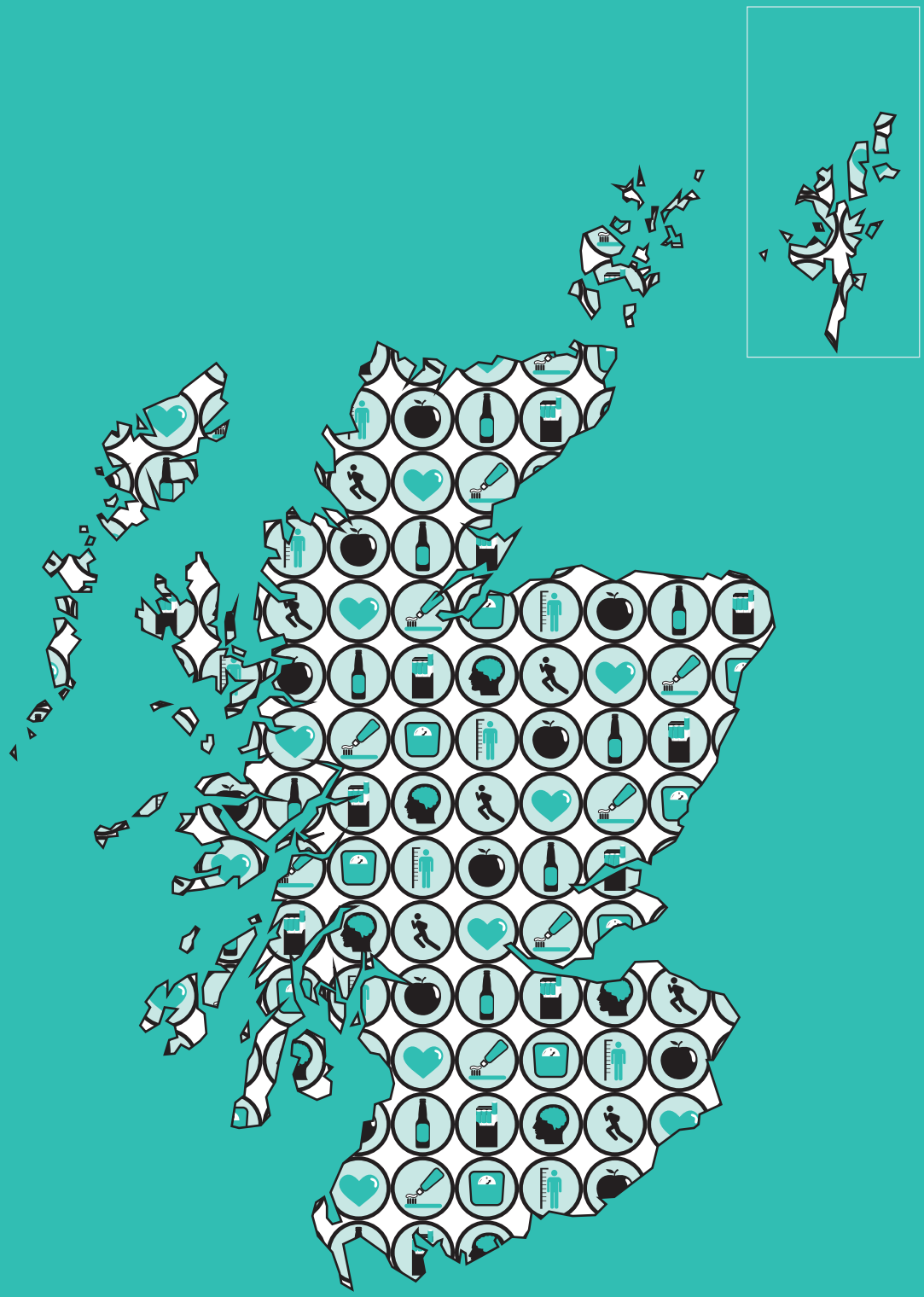
Aged 0 - 15 *2012 - 2016*

Children's exposure to second-hand smoke in own home	2012	2013	2014	2015	2016
	%	%	%	%	%
Boys					
Whether anyone smokes in accommodation	19	18	17	12	12
Reported exposure to second-hand smoke in own home	12	11	12	6	7
Girls					
Whether anyone smokes in accommodation	18	15	16	11	9
Reported exposure to second-hand smoke in own home	12	10	10	5	7
All children					
Whether anyone smokes in accommodation	19	16	16	12	11
Reported exposure to second-hand smoke in own home	12	11	11	6	7
Bases (weighted):					
Boys	*914*	*940*	*852*	*725*	*798*
Girls	*873*	*899*	*816*	*695*	*763*
All children	*1787*	*1839*	*1668*	*1420*	*1561*
Bases (unweighted):					
Boys	*879*	*948*	*842*	*735*	*771*
Girls	*908*	*891*	*826*	*685*	*790*
All children	*1787*	*1839*	*1668*	*1420*	*1561*

Table 2.9 Children's exposure to second-hand smoke, 2016, by area deprivation and sex

Aged 0 - 15 *2016*

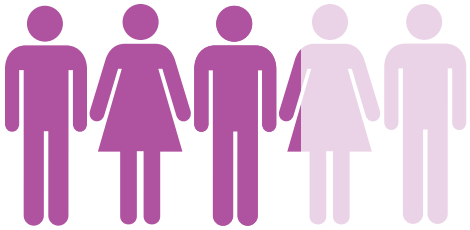
Children's exposure to second-hand smoke	Scottish Index of Multiple Deprivation				
	5th (Least deprived)	4th	3rd	2nd	1st (Most deprived)
	%	%	%	%	%
Boys					
Whether anyone smokes in accommodation	5	4	12	18	25
Reported exposure to second-hand smoke in own home	2	1	3	12	15
Girls					
Whether anyone smokes in accommodation	1	7	8	10	20
Reported exposure to second-hand smoke in own home	1	7	4	7	16
All children					
Whether anyone smokes in accommodation	3	5	10	14	23
Reported exposure to second-hand smoke in own home	1	4	4	9	15
Bases (weighted):					
Boys	*167*	*177*	*149*	*128*	*177*
Girls	*169*	*151*	*162*	*129*	*152*
All children	*336*	*328*	*311*	*257*	*329*
Bases (unweighted):					
Boys	*160*	*172*	*148*	*118*	*173*
Girls	*176*	*170*	*164*	*131*	*149*
All children	*336*	*342*	*312*	*249*	*322*



Chapter 3

Physical Activity

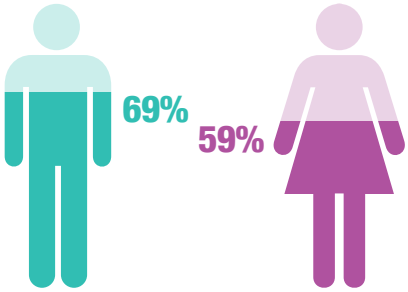
SUMMARY



Two thirds of adults

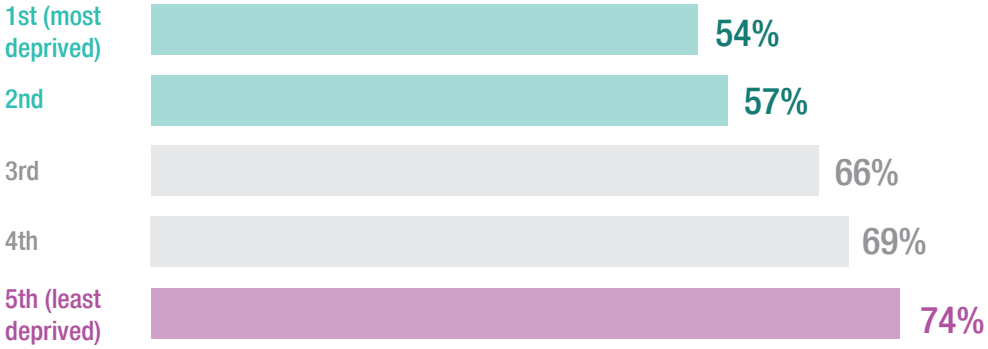
(64%) met the guidelines for Moderate or Vigorous Physical Activity in 2016, a similar level to that seen since 2012 (62-64%).

- Younger age groups continued to be more likely than older age groups to meet the MVPA guidelines (75-76% of those aged 16-44, compared to 30% of those aged 75 and over).



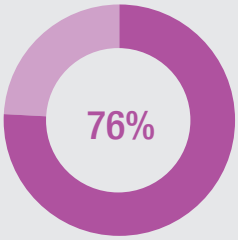
Men continue to be more likely than women to meet the MVPA guidelines

Adults in the two most deprived areas were less likely to adhere to MVPA guidelines than those in the least deprived area



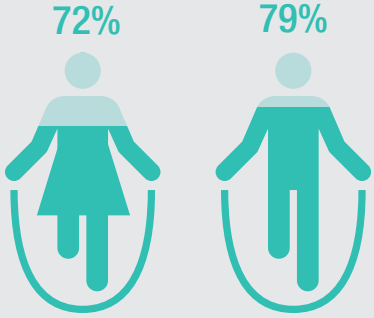
- Younger children were more likely than older children to meet the physical activity guidelines, (82% of 5-7 year-olds doing so, compared with 61% of those aged 13-15, school-based activity included).

- In 2016, 68% of children had participated in sport and exercise in the week prior to the interview, this has been relatively stable since 2010 but fluctuated in previous survey years with the highest level seen in 2009 (73%).



of children met the guidelines on physical activity, an increase from 71% in 2008

Girls had significantly lower levels of physical activity than boys



3. PHYSICAL ACTIVITY

Eilidh Currie

3.1 INTRODUCTION

There is widespread consensus around the evidence base for the health, economic and social benefits of physical activity with strong scientific evidence that sufficient, regular physical activity is beneficial for the health of body and mind. Physical activity improves the health of the heart; skeletal muscles; bones; blood; immune system and nervous system. Physical activity also improves psychological wellbeing; self-perception and self-esteem; and mood and sleep quality[1].

Furthermore, there is clear evidence that physical activity reduces the risk of over twenty five chronic health conditions, including coronary heart disease, stroke, type 2 diabetes, cancer, obesity, mental health problems and musculoskeletal problems, and has secondary prevention benefits for many others[2].

We also know that physical *inactivity* shortens life expectancy. The most recent global estimate is that inactivity is responsible for 9% of premature deaths, or 5.3m of the 57 million deaths that occurred worldwide in 2008[3]. Physical inactivity is estimated to kill around 2,500 Scots each year and cause direct costs to the NHS of around £91m per year[4].

Physical activity is particularly important for older populations and their ability to maintain functional independence[5]. Many activities of daily living, such as getting out of a chair, or climbing stairs, do not necessarily require significant aerobic fitness, but do require musculoskeletal fitness (i.e. muscle strength, endurance, power and flexibility) that improves balance, can help prevent or delay the onset of functional limitations, improve functional ability, and reduce falls.

In addition to physical function, there is evidence that physical activity contributes to the maintenance of cognitive function in older adults[6]. Physical activity delays the incidence of dementia and the onset of cognitive decline associated with ageing. A more active older population will be better able to live independently.

The UK Chief Medical Officers' guidelines on recommended amounts of physical activity for adults were issued in 2011[7]. Broadly, in adults, there is a dose-response relationship between physical activity and health, meaning greater benefits occur with greater participation. The largest reductions in disease risk occur at the lower end of the spectrum, implying the greatest benefits from a population health perspective arise from moving from inactivity to some level of activity. The available evidence to date on levels of activity suggests that any is better than none, some is good, and more is better[8].

Table 3A UK CMO physical activity guidelines (2011)

Age group	Guidelines
Early years – children under 5 years	○ Physical activity should be encouraged from birth, particularly through floor-based play and water-based activities in safe environments. ○ Children capable of walking unaided should be physically active daily for at least 180 minutes (3 hours), spread throughout the day. ○ Minimise amount of time spent being sedentary (being restrained or sitting) for extended periods (except time spent sleeping).
Children and young people aged 5 to 18	○ Should engage in moderate to vigorous activity for at least 60 minutes and up to several hours every day. ○ Vigorous activities, including those that strengthen muscles and bones, should be carried out on at least 3 days a week. ○ Extended periods of sedentary activities should be limited. ○ Should be active daily.
Adults aged 19-64	○ Should engage in at least moderate activity for a minimum of 150 minutes a week (accumulated in bouts of at least 10 minutes) - for example by being active for 30 minutes on five days a week. ○ Alternatively, 75 minutes of vigorous activity spread across the week will confer similar benefits to 150 minutes of moderate activity (or a combination of moderate and vigorous activity). ○ Activities that strengthen muscles should be carried out on at least two days a week. ○ Extended periods of sedentary activities should be limited.
Adults aged 65 and over	○ In addition to the guidance for adults aged 19-64, older adults are advised that any amount of physical activity is better than none, and more activity provides greater health benefits. ○ Older adults at risk of falls should incorporate activities to improve balance and coordination on at least two days a week.

3.2 POLICY BACKGROUND

In common with many developed societies, Scotland faces increasing challenges to public health arising from lifestyle behaviours, wider social-cultural factors that prevent positive health choices being made and a modern environment that impacts on the health and wellbeing of individuals, families and communities.

We know that the drivers of good health are for the most part in our homes, schools and communities and that improving public health means creating the conditions where people have the hope and purpose to think better choices are available to them. That means looking to the deep-rooted causes of social and economic inequality which result in children born into Scotland's most deprived communities being likely to live for 20 fewer years in good health. It also means recognising that improving public health will require concerted effort across the whole of society.

The Scottish Government **Health and Social Care Delivery Plan** (2016)[9] emphasises the requirement for a concerted, sustained and comprehensive approach to improving population health through targeting particular health behaviours, acting to reduce avoidable harm and illnesses and taking a population and whole life approach to prevention and early intervention.

The Scottish Government's vision is for a Scotland where physical activity is a routine part of everyone's daily life whether that is through walking or cycling to work, school, or to the shops, through gardening or dance, through active play or formal sport, or through any activities which result in Scots sitting less and moving more.

The **Active Scotland Outcomes Framework**[10], published in 2014, sets out the Scottish Government's ambitions for a more active Scotland. The Framework aims to help to bring both a common language to this landscape and also encapsulate the best of international research. Progress towards the achievement of the Framework has been made through a range of activities across sectors through the implementation of a the **National Walking Strategy**[11], **Cycling Action Plan**[12], **Active Schools** programme[13], Community Sports Hubs and Legacy 2014 Physical Activity Fund[14]. The Scottish Government has committed to expanding the **Daily Mile**[15] to ensure that Scotland becomes the first 'Daily Mile nation' with roll out to nurseries, schools, colleges, universities and workplaces. The 'Care About…Physical Activity'[16] programme is also being extended to provide greater support for older people in care to be physically active.

3.2.1 Reporting on physical activity in the Scottish Health Survey

Adult adherence to the guidelines on moderate / vigorous physical activity (MVPA) is presented in this chapter along with sport participation levels. Trends in child physical activity, both including and excluding school-based activities, and in child participation in sports and exercise are also presented. These headline measures are key indicators for a number of strategies.

The area deprivation data for physical activity are presented in Scottish index of Multiple Deprivation (SIMD) quintiles. To ensure that the comparisons presented are not confounded by the different age profiles of the quintiles, the data have been age-standardised. Readers should refer to the Glossary at the end of this Volume for a detailed description of SIMD and age-standardisation.

Supplementary tables on physical activity are available on the survey website[17].

3.3 METHODS AND DEFINITIONS

3.3.1 Adult physical activity questionnaire

The SHeS questionnaire[18] asks about four main types of physical activity:

- Home-based activities (housework, gardening, building work and DIY)
- Walking
- Sports and exercise
- Activity at work.

Information is collected on the:

- time spent being active
- intensity of the activities undertaken
- frequency with which activities are performed.

3.3.2 Adherence to adult physical activity guidelines

Monitoring adherence to the revised guidelines (discussed in Section 3.1) required several changes to be made to the SHeS physical activity questions in 2012. Details of the amendments made to the module, and fuller details of the information collected about physical activity, are outlined in the 2012 SHeS annual report[19].

The current activity guidelines advise adults to accumulate 150 minutes of moderate activity or 75 minutes of vigorous activity per week or an equivalent combination of both, in bouts of 10 minutes or more. These guidelines are referred to throughout this chapter as the MVPA guidelines (Moderate or Vigorous Physical Activity). To help assess adherence to this guideline, the intensity level of activities mentioned by participants was estimated. Activities of low intensity, and activities of less than 10 minutes duration, were not included in the assessment. This allowed the calculation of a measure of whether each SHeS participant adhered to the guideline, referred to in the text and tables as "adult summary activity levels". A more detailed discussion of this calculation is provided in the 2012 report[19].

Table 3B Adult summary activity levels[a]

Meets MVPA guidelines	Reported 150 mins/week of moderate physical activity, 75 mins vigorous physical activity, or an equivalent combination of these.
Some activity	Reported 60-149 mins/week of moderate physical activity, 30-74 mins/week vigorous physical activity, or an equivalent combination of these.
Low activity	Reported 30-59 mins/week of moderate physical activity, 15-29 mins/week vigorous physical activity or an equivalent combination of these.
Very low activity	Reported less than 30 mins/week of moderate physical activity, less than 15 mins/week vigorous physical activity, or an equivalent combination of these.

[a] Only bouts of 10 minutes or more were included towards the 150 minutes per week guideline

To avoid overcomplicating the text, where descriptions are provided of the summary activity levels, they tend to refer only to moderate physical

activity, although the calculations were based on moderate or vigorous activity as described above.

3.3.3 Child physical activity questionnaire

The questions on child physical activity are slightly less detailed than those for adults[20]. No information on intensity is collected (with the exception of asking those aged 13-15 about their walking pace). The questions cover:

- Sports and exercise
- Active play
- Walking
- Housework or gardening (children aged 8 and over only).

Children were asked to provide information on the average duration of sports and exercise activities for a typical weekday and typical weekend day. They were not asked to differentiate between different weekday or weekend days or to provide a specific duration for each separate day.

Since 2008, children at school have also been asked about any active things they have done as part of lessons (using the same format of questions as for all other activity types). Full details of all the information collected was provided in the 2012 report[19].

3.3.4 Adherence to child physical activity guidelines

For the purposes of calculating physical activity levels, it was assumed that all reported activities were of at least moderate intensity. Data on each of the different activities have been summarised to provide an overall measure of child physical activity. This summary measure takes into account both the average time spent participating in physical activity, and the number of active days in the last week. Each child's level of physical activity was assigned to one of three categories:

Table 3C Child summary activity levels

Meets guideline	Active on 7 days in last week for an average of at least 60 minutes per day
Some activity	Active on 7 days in last week for an average of 30 to 59 minutes per day
Low activity	Active on fewer than 7 days in last week or for an average of less than 30 minutes a day

From the start of 2017, the amount of activity the child undertook on each day of the week has been collected. As such, the report of the 2017 data, (to be published next year) will present children's adherence to the physical activity guidelines on two bases: a) an average of at least 60 minutes per day (as in this report) and b) at least 60 minutes on every day.

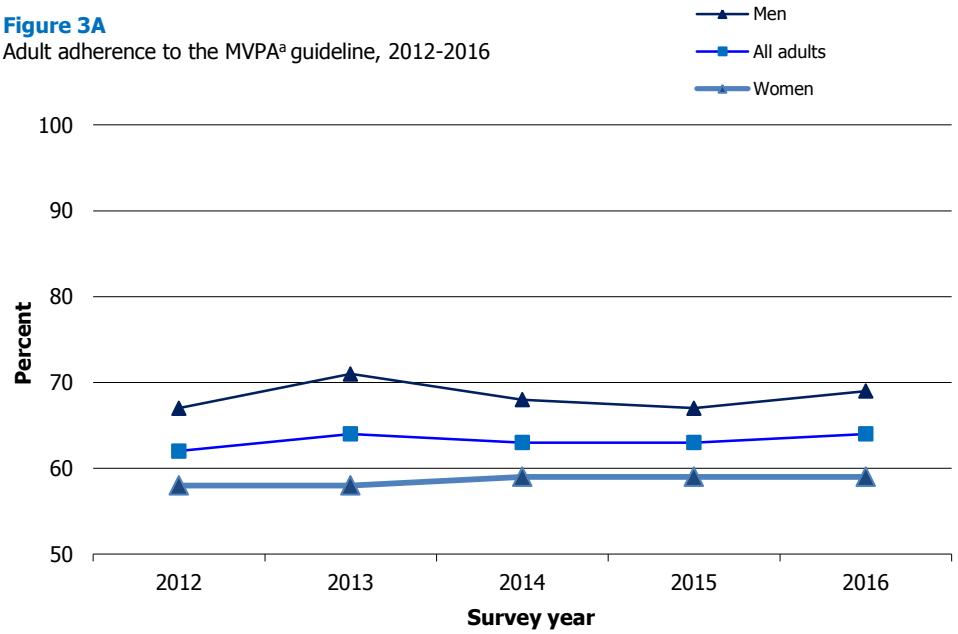
3.4 ADULT PHYSICAL ACTIVITY LEVELS

3.4.1 Summary activity levels since 2012

In 2016, almost two-thirds (64%) of adults met the guidelines for moderate or vigorous physical activity (MVPA) of at least 150 minutes of moderate physical activity, 75 minutes vigorous physical activity, or an equivalent combination of the two, per week. Furthermore, 11% of adults reported some physical activity, 5% reported low levels and 20% reported very low levels. As illustrated in Figure 3A, the proportion of all adults meeting the guidelines has not changed significantly since 2012, ranging from 62-64%.

Men remained significantly more likely than women to meet the MVPA guidelines in 2016 (69% compared with 59%), with some fluctuation for both men and women since 2012. **Figure 3A, Table 3.1**

Figure 3A
Adult adherence to the MVPA[a] guideline, 2012-2016



[a]Meets moderate/vigorous physical activity guideline of 150 minutes of moderate, 75 minutes vigorous, or combination of both each week

3.4.2 Summary adult physical activity levels, 2016, by age and sex

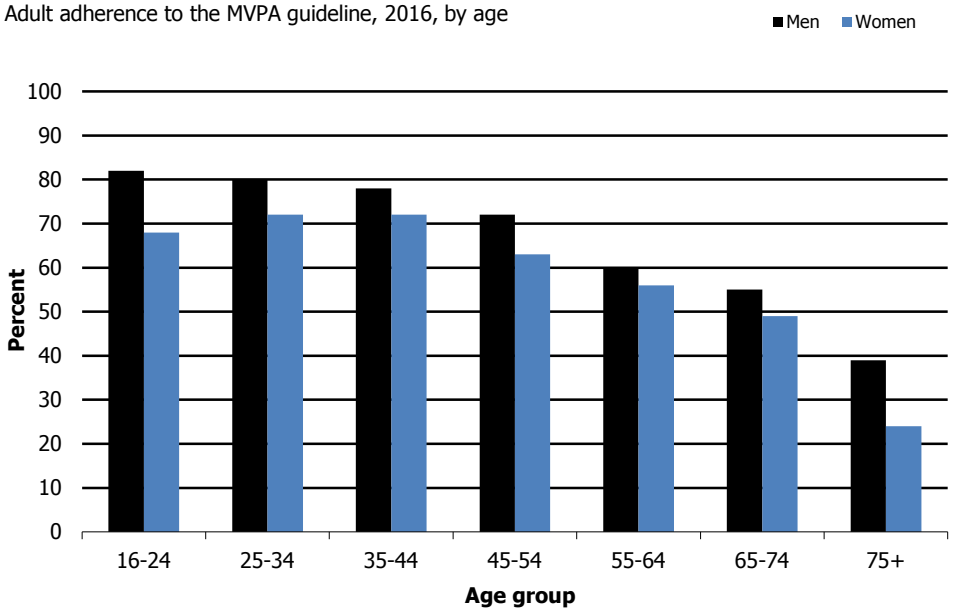
Physical activity levels among adults were significantly associated with age, with younger age groups more likely than older age groups to meet the MVPA guidelines. Adherence to the guidelines was highest among those aged 16-44 (75-76%) and declined from 67% among those aged 45-54 to 30% among adults aged 75 and over. The pattern by age was similar for men and women.

The decline in activity levels by age among both men and women corresponded to increasing levels of very low activity (less than half an hour a week of moderate activity or the equivalent level of vigorous activity) as age increased. Though there was little variation in the proportion of adults undertaking ‘some activity’ or ‘low activity’ across

the age groups, the proportion with very low activity levels increased from a range of 9-11% among those in the three youngest age groups (16-44) to 51% among those aged 75 and over.

As shown in Figure 3B, across all age groups men's physical activity levels were higher than women's. The difference between men and women's adherence to the MVPA guidelines was most evident among the youngest and oldest age groups: 82% of men aged 16-24 met the guidelines compared with 68% of women of the same age (14 percentage points difference); and 39% of men aged 75 and over met the guidelines compared with 24% of women of that age (15 percentage points difference). The difference was smallest, and not statistically significant, between men and women aged 55-64 (four percentage points). **Figure 3B, Table 3.2**

Figure 3B
Adult adherence to the MVPA guideline, 2016, by age



3.4.3 Summary adult physical activity levels, 2016, by area deprivation and sex

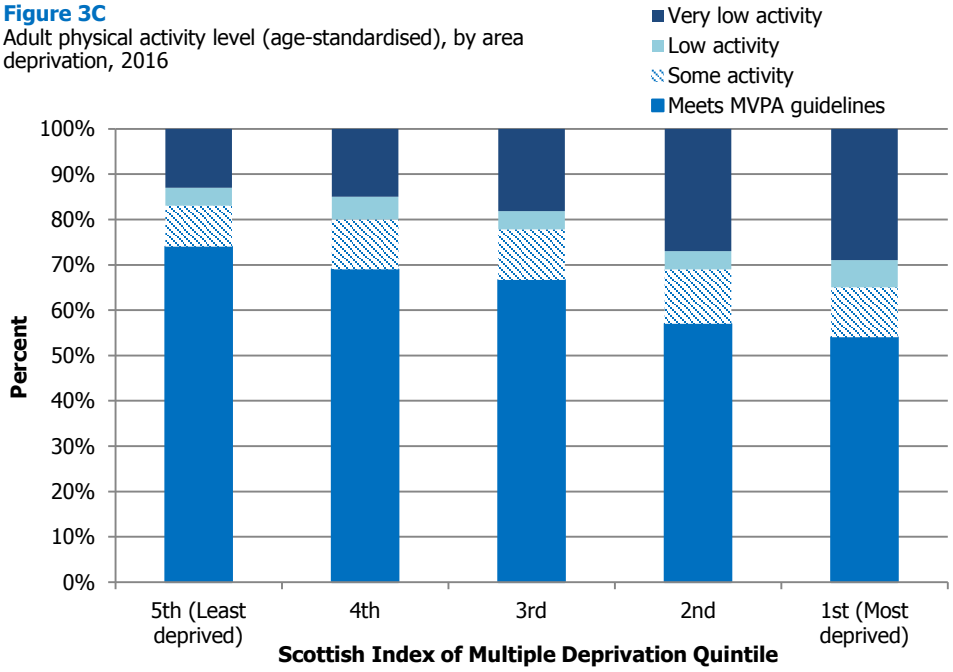
Adult physical activity levels were significantly associated with area deprivation. As Figure 3C shows, the age-standardised prevalence of adherence to the MVPA guidelines was highest among adults in the least deprived areas at 74%, and steadily declined with increasing deprivation to 54% among adults in the most deprived areas.

This pattern was true for both men and women, with the decline being greater for women than for men. For men, the age-standardised prevalence of adherence to the MVPA guidelines declined from 77% in the least deprived areas to 61% in the most deprived areas. Among women, the age-standardised prevalence of adherence to the MVPA guidelines declined from 71% to 48%.

Similar to the pattern observed for age, the decline in adherence to the MVPA guidelines as deprivation increased largely corresponded to the

increasing levels of very low activity. The percentage of those with very low activity levels increased from 13% in the least deprived areas to 29% in the most deprived areas. Meanwhile, there was little variation in the proportion of those undertaking 'some activity' (9-12%) or 'low activity' (4-6%) across the quintiles. These patterns were evident for both sexes. **Figure 3C, Table 3.3**

Figure 3C
Adult physical activity level (age-standardised), by area deprivation, 2016



3.4.4 Adult sport participation in 2016, by age and sex

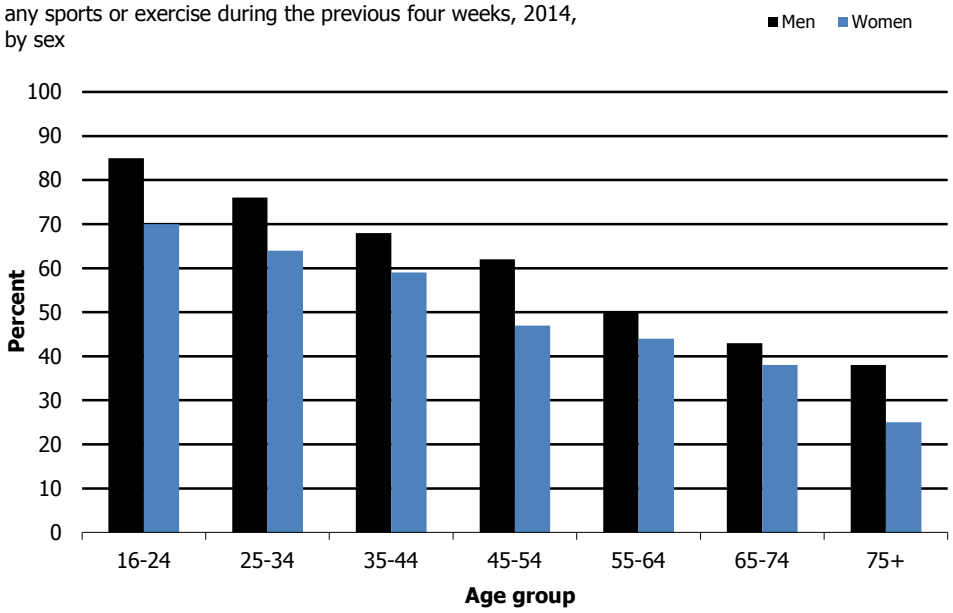
In 2016, 56% of adults had participated in sport and/or exercise during the four weeks prior to interview. The most popular activities reported included working out at a gym (17%), exercises (16%), swimming (13%), running/jogging (12%), hillwalking/rambling and cycling (both 10%).

There were significant differences in sport participation between men and women. Men were more likely than women to have participated in sport and/or exercise during the last four weeks (62% and 51% respectively). Furthermore, there were variations in the most popular activities reported between the sexes. For example, men were more likely than women to have participated in running, cycling, football/rugby and golf, whereas women were more likely to have participated in swimming, yoga/pilates and aerobics / keep fit / gymnastics / dance. Activities such as badminton, hillwalking / rambling, and basketball were equally popular among men and women.

The proportion of adults taking part in any sport and/or exercise during the four weeks prior to interview also varied significantly by age. As Figure 3D illustrates, 78% of those aged 16-24 had participated in any sport and/or exercise during the last four weeks, this then declined steadily to 30% among those aged 75 and over. This trend was observed for both men and women.

In addition, for the majority of types of sports, participation declined with age, with the exception of bowls, fishing / angling and golf, for which participation levels remained broadly steady or increased with increasing age. **Figure 3D, Table 3.4**

Figure 3D
Percentage of adults aged 16 and over who participated in any sports or exercise during the previous four weeks, 2014, by sex



3.5 CHILD PHYSICAL ACTIVITY LEVELS

3.5.1 Proportion of children meeting physical activity guideline since 1998

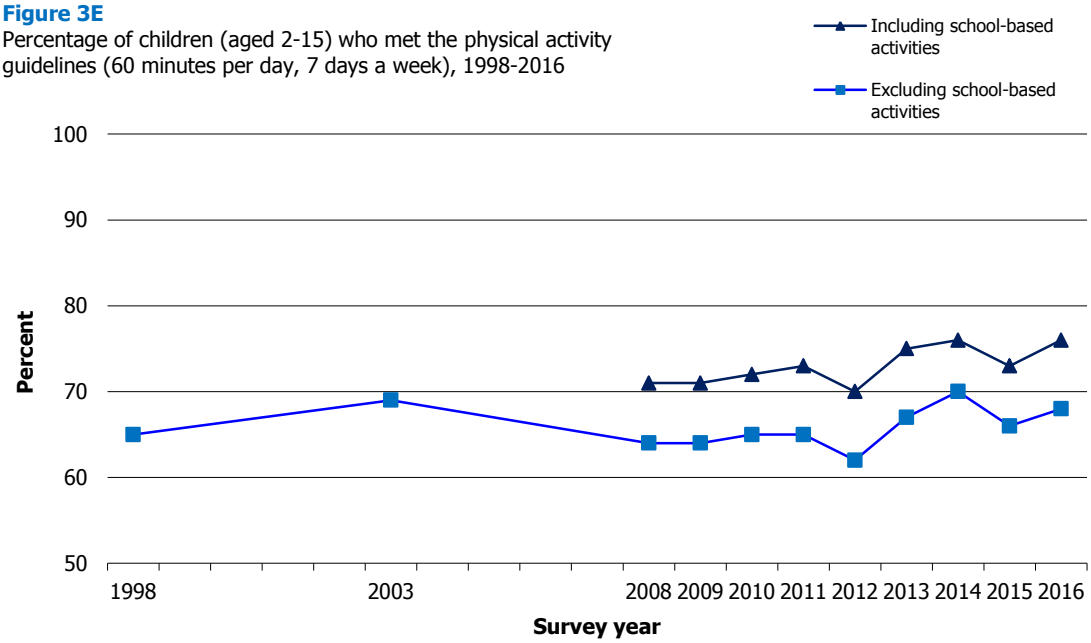
Information on children's physical activity has been collected in SHeS since 1998, and physical activity carried out while at school has been collected since 2008. The proportion of children aged 2-15 meeting the physical activity guideline of 60 minutes of activity per day[21], including and excluding activity at school, from 1998 to 2016 are presented in Figure 3E.

Just over three quarters (76%) of children aged 2-15 were active at the recommended level (including activity at school) in 2016, representing a statistically significant increase of five percentage points since 2008. This general trend of increased physical activity levels (including activity at school) was apparent for girls where it increased from 64% in 2008 to 72% in 2016. For boys the trend pattern was less clear fluctuating between 73% and 79% during the time period.

When school-based activities are excluded, 68% of children aged 2-15 met the guideline on physical activity in 2016. The long term trend has not shown a significant difference from 1998 (65%) to 2016 (68%), and has fluctuated over that time period. This pattern of fluctuation was

apparent for both boys and girls. Boys have been more likely to meet the guidelines than girls since 1998. **Figure 3E, Table 3.5**

Figure 3E
Percentage of children (aged 2-15) who met the physical activity guidelines (60 minutes per day, 7 days a week), 1998-2016



3.5.2 Physical activity levels in children in 2016, by age and sex

Children's physical activity levels varied significantly by age, with younger children more likely than older children to meet the physical activity guideline. When school-based activity was included, the proportion of children meeting the guideline was highest for those aged 5-7 (82%). Adherence then declined steadily with increased age, to 61% for those aged 13-15. This pattern was also observed when school-based activity was excluded, although the decline in activity was more pronounced. The proportion of those meeting the physical activity guideline was highest in the youngest age group (77%) and declined to 48% for those aged 13-15.

The pattern by age was significantly different for boys and girls both when school-based activities were included and excluded. Among boys the proportion meeting the physical activity guidline including activity at school peaked at 86% for those aged 11-12 before declining sharply to 72% of those aged 13-15. Among girls the rate was highest for those aged 5-7 (81%) and declined to 49% for those aged 13-15. When activity at school is excluded a different pattern by age is also apparent when examing boys and girls separately. The proportion of boys meeting the guidelines fluctuated between 73% and 78% from ages 2-12 before declining sharply to 58% for those in the oldest age group (aged 13-15). For girls the decline by increasing age started at age 11-12 where it had dropped from 73% among those aged 8-10 to 53% for 11-12 year olds, and further dropped to 36% for those aged 13-15.

As Figures 3F and 3G illustrate the significant difference in activity levels between boys and girls was largely explained by differences in

the older age groups (11-12 and 13-15). Girls in those age groups had significantly lower levels of physical activity compared with boys, both when activity at school was included and excluded. There was a nine percentage point gap overall between boys (73%) and girls (64%) when school-based activity was excluded, which rose to 25 percentage points for those aged 11-12 and 22 percentage points for those aged 13-15. This pattern of lower activity levels among girls aged 11-12 and 13-15 was also observed when school-based activity was included, and in part explains why boys were significantly more likely than girls to meet the guideline overall. Levels of physical activity were more similar for boys and girls in the other age groups. **Figure 3F, Figure 3G, Table 3.6**

Figure 3F

Percentage of children meeting the physical activity guideline of at least 60 minutes every day of the week (excluding school activity), 2016, by age and sex

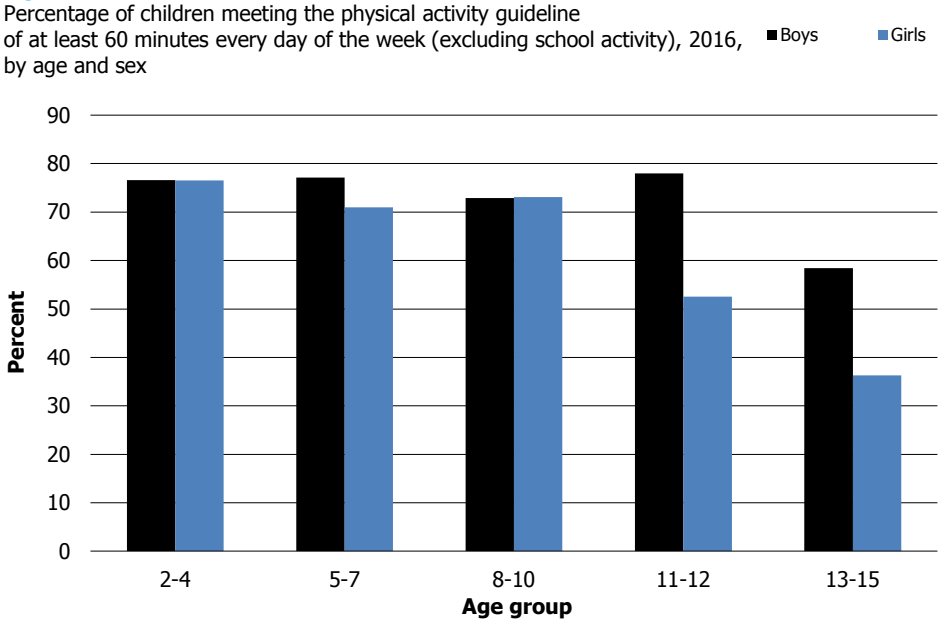
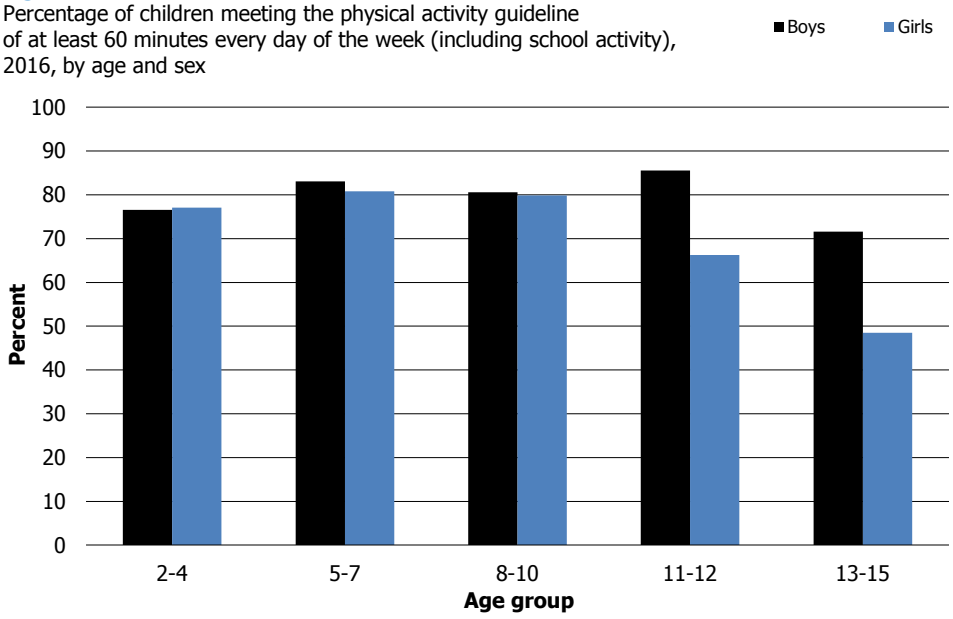


Figure 3G

Percentage of children meeting the physical activity guideline of at least 60 minutes every day of the week (including school activity), 2016, by age and sex



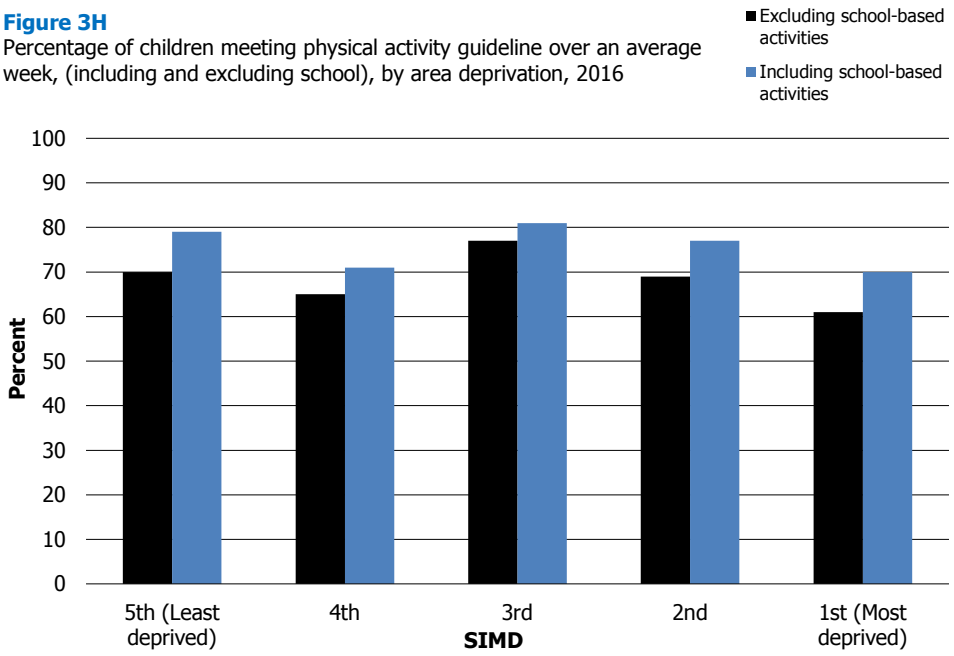
3.5.3 Physical activity levels in children, 2016, by area deprivation and sex

Children's physical activity levels varied by area deprivation, although there was no clear pattern of association.

As illustrated in Figure 3H, adherence to the physical activity guideline when school-based activities were included was highest among children in the 3rd quintile of area deprivation (81%) and lowest among children in the most deprived quintile (70%). Similarly when school-based activities were excluded, adherence to the physical activity guideline was highest for children in the 3rd quintile (77%) and lowest for children in the most deprived quintile (61%).

This pattern was similar for boys and girls. Among boys, the prevalence of adherence to the physical activity guideline (including school-based activities) was highest in the 5th (least deprived) and 3rd quintile (both 84%) and lowest in the most deprived areas (72%). For girls prevalence was highest in the 3rd quintile (78%) and lowest in the 4th quintile (66%). These patterns were similar when school-based activities were excluded. **Figure 3H, Table 3.7**

Figure 3H
Percentage of children meeting physical activity guideline over an average week, (including and excluding school), by area deprivation, 2016



3.5.4 Percentage of children participating in sport, 1998 to 2016

In 2016, 68% of children aged 2-15 had participated in sport in the week prior to interview, continuing the relatively stable trend since 2010 (ranging between 70% and 66%) following a drop from 73% in 2009.

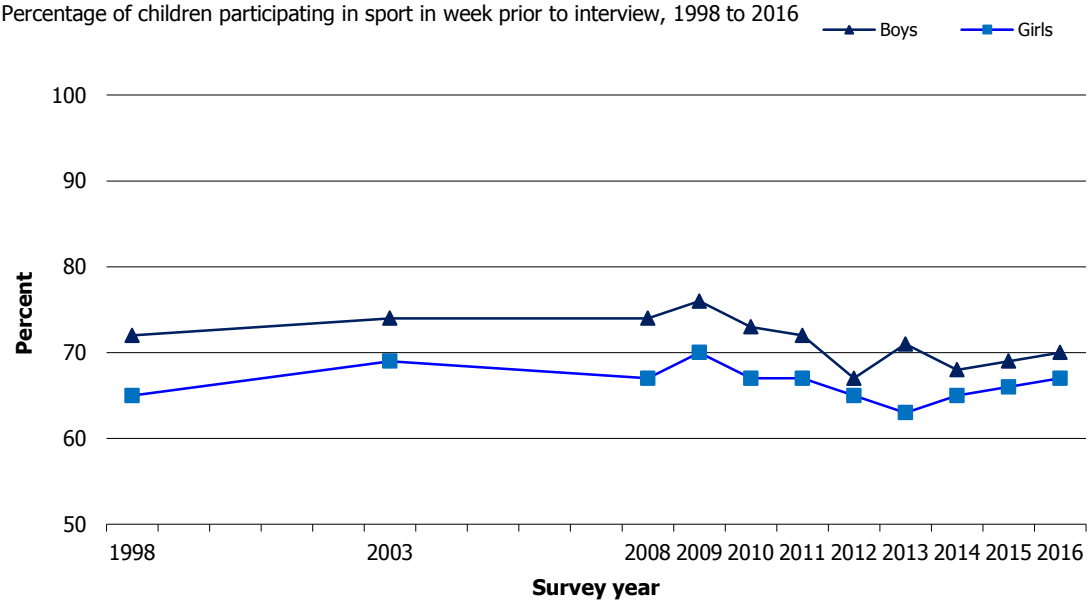
Sport participation rates in 2016 were similar for boys and girls (70% and 67% respectively). The sports participation level among boys has remained relatively stable since 2012 (between 67% and 71%) following a decrease from 76% in 2009. Similarly to boys, the level of girls

participation in sport in the previous week was at its highest in 2009 (70%) with levels fluctuating between 63% and 67% since.

Figure 3I, Table 3.8

Figure 3I

Percentage of children participating in sport in week prior to interview, 1998 to 2016



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[13] See: http://www.gov.scot/Topics/ArtsCultureSport/Sport/Participation/YouthDevelopment /ActiveSchools

[14] See: http://legacy2014.co.uk/legacy-in-action/funding-for-physical-activity

[15] See: http://thedailymile.co.uk/

[16] See: http://hub.careinspectorate.com/knowledge/good-practice/2014/03/careabout-physical-activity/

[17] See: www.gov.scot/Topics/Statistics/Browse/Health/scottish-health-survey

[18] The questions used in the survey since 1998 are based on the Allied Dunbar National Fitness Survey, a major study of physical activity among the adult population in England carried out in 1990. For further details see: Health Education Authority. Allied Dunbar National Fitness Survey. Health Education Authority and Sports Council, London. 1992

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[20] The questions on child physical activity included in SHeS since 1998 are based on the 1997 Health Survey for England (HSE) children's physical activity module.

[21] Up to and including 2016, children were asked to provide information on the average duration of sports and exercise activities for a *typical* day, and were not asked to differentiate between different weekday or weekend days or to provide a specific duration for each separate day. In this report adherence to the physical activity guidelines is calculated using an average of at least 60 minutes per day. From the start of 2017, the amount of activity the child undertook on each day of the week has been collected. The report of the 2017 data, (to be published next year) will present children's adherence to the physical activity guidelines on two bases: a) an average of at least 60 minutes per day (as in this report) and b) at least 60 minutes on every day.

Table list

Table 3.1 Adult summary activity levels, 2012 to 2016

Aged 16 and over *2012 - 2016*

Summary activity levels[a]	2012	2013	2014	2015	2016
	%	%	%	%	%
Men					
Meets MVPA guidelines	67	71	68	67	69
Some activity	10	8	10	9	10
Low activity	4	3	4	4	3
Very low activity	19	18	19	19	18
Women					
Meets MVPA guidelines	58	58	59	59	59
Some activity	14	14	12	14	12
Low activity	6	5	5	5	6
Very low activity	23	23	24	23	23
All adults					
Meets MVPA guidelines	62	64	63	63	64
Some activity	12	11	11	12	11
Low activity	5	4	4	5	5
Very low activity	21	21	22	21	20
Bases (weighted):					
Men	*2307*	*2336*	*2225*	*2383*	*2051*
Women	*2505*	*2542*	*2411*	*2585*	*2213*
All adults	*4811*	*4878*	*4636*	*4968*	*4264*
Bases (unweighted):					
Men	*2122*	*2129*	*2054*	*2229*	*1874*
Women	*2685*	*2747*	*2581*	*2733*	*2401*
All adults	*4807*	*4876*	*4635*	*4962*	*4275*

a Meets moderate/vigorous physical activity (MVPA) guidelines: at least 150 minutes of moderately intensive physical activity or 75 minutes vigorous activity per week or an equivalent combination of both. Some activity: 60-149 minutes of moderate activity or / 30-74 minutes of vigorous activity or an equivalent combination of these. Low activity: 30-59 minutes of moderate activity or 15-29 minutes of vigorous activity or an equivalent combination of these. Very low activity: Less than 30 minutes of moderate activity or less than 15 minutes of vigorous activity or an equivalent combination of these

Table 3.2 Adult summary activity levels, 2016, by age and sex

Aged 16 and over *2016*

Summary activity levels[a]	Age							Total
	16-24[b]	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Meets MVPA guidelines	82	80	78	72	60	55	39	69
Some activity	8	12	7	7	10	12	13	10
Low activity	4	2	3	3	3	5	5	3
Very low activity	5	6	11	19	26	28	42	18
Women								
Meets MVPA guidelines	68	72	72	63	56	49	24	59
Some activity	9	10	12	12	13	14	13	12
Low activity	8	6	4	5	8	5	5	6
Very low activity	15	12	11	19	23	32	58	23
All adults								
Meets MVPA guidelines	75	76	75	67	58	52	30	64
Some activity	9	11	10	10	12	13	13	11
Low activity	6	4	4	4	6	5	5	5
Very low activity	10	9	11	19	25	30	51	20
Bases (weighted):								
Men	*282*	*335*	*319*	*374*	*322*	*252*	*167*	*2051*
Women	*278*	*346*	*333*	*399*	*339*	*279*	*238*	*2213*
All adults	*560*	*681*	*652*	*774*	*661*	*531*	*404*	*4264*
Bases (unweighted):								
Men	*165*	*211*	*264*	*336*	*356*	*334*	*208*	*1874*
Women	*195*	*320*	*341*	*434*	*428*	*398*	*285*	*2401*
All adults	*360*	*531*	*605*	*770*	*784*	*732*	*493*	*4275*

a Meets moderate/vigorous physical activity (MVPA) guidelines: at least 150 minutes of moderately intensive physical activity or 75 minutes vigorous activity per week or an equivalent combination of both. Some activity: 60-149 minutes of moderate activity or / 30-74 minutes of vigorous activity or an equivalent combination of these. Low activity: 30-59 minutes of moderate activity or 15-29 minutes of vigorous activity or an equivalent combination of these. Very low activity: Less than 30 minutes of moderate activity or less than 15 minutes of vigorous activity or an equivalent combination of these
b Physical activity guidelines for those aged 16-18 are at least one hour of moderate or vigorous activity each day. As SHeS participants of that age were given the adult questionnaire, which does not ask separately about each day, they have been included in this table assessed against the adult criteria

Table 3.3 Adult summary activity levels (age-standardised), 2016, by area deprivation and sex

Aged 16 and over *2016*

Summary activity levels[a]	Scottish Index of Multiple Deprivation				
	5th (Least deprived)	4th	3rd	2nd	1st (Most deprived)
	%	%	%	%	%
Men					
Meets MVPA guidelines	77	75	73	60	61
Some activity	8	10	8	10	11
Low activity	4	3	3	3	4
Very low activity	11	13	16	27	25
Women					
Meets MVPA guidelines	71	64	60	55	48
Some activity	10	13	14	13	11
Low activity	4	6	6	5	8
Very low activity	15	17	20	27	34
All adults					
Meets MVPA guidelines	74	69	66	57	54
Some activity	9	11	11	12	11
Low activity	4	5	4	4	6
Very low activity	13	15	18	27	29
Bases (weighted):					
Men	*440*	*382*	*442*	*373*	*413*
Women	*470*	*379*	*449*	*421*	*492*
All adults	*910*	*761*	*892*	*794*	*905*
Bases (unweighted):					
Men	*419*	*416*	*427*	*318*	*294*
Women	*508*	*499*	*544*	*432*	*418*
All adults	*927*	*915*	*971*	*750*	*712*

a Meets moderate/vigorous physical activity (MVPA) guidelines:at least 150 minutes of moderately intensive physical activity or 75 minutes vigorous activity per week or an equivalent combination of both. Some activity: 60-149 minutes of moderate activity or / 30-74 minutes of vigorous activity or an equivalent combination of these. Low activity: 30-59 minutes of moderate activity or 15-29 minutes of vigorous activity or an equivalent combination of these. Very low activity: Less than 30 minutes of moderate activity or less than 15 minutes of vigorous activity or an equivalent combination of these

b Physical activity guidelines for those aged 16-18 are at least one hour of moderate or vigorous activity each day. As SHeS participants of that age were given the adult questionnaire, which does not ask separately about each day, they have been included in this table assessed against the adult criteria

Table 3.4 Adult sport participation, 2016, by age and sex

Aged 16 and over who took part in any sport/exercise *2016*

Participation in activity during last four weeks	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Any sport or exercise	85	76	68	62	50	43	38	62
No sport or exercise	15	24	32	38	50	57	62	38
Swimming	15	10	17	16	8	7	2	11
Cycling	16	14	18	16	11	7	5	13
Workout at a gym/Exercise bike/ Weight training	38	31	18	14	11	6	1	18
Aerobics/Keep fit/ Gymnastics/ Dance for fitness	7	7	4	0	2	1	3	3
Any other type of dancing	2	3	3	1	2	1	3	2
Running/jogging	35	22	16	12	6	2	0	14
Football/rugby	37	27	12	6	3	0	-	13
Badminton/tennis	6	4	3	4	2	1	-	3
Exercises (eg press-ups, sit ups)	40	23	17	13	11	7	5	17
Bowls	0	1	1	2	3	6	12	3
Fishing/angling	3	3	4	6	3	2	2	3
Golf	3	9	10	8	10	11	8	9
Hillwalking/rambling	9	13	10	15	11	8	6	11
Snooker/billiards/pool	20	10	8	5	1	3	2	7
Aqua-robics/ aquafit/ exercise class in water	-	0	0	-	-	1	-	0
Yoga/pilates	3	3	3	2	2	1	0	2
Athletics	6	0	0	0	0	0	-	1
Basketball	8	1	0	0	-	-	-	1
Canoeing/Kayaking	3	1	2	2	0	0	-	1
Climbing	6	0	3	1	0	-	-	2
Horse riding	1	-	-	0	1	-	-	0
Ice skating	2	2	-	1	-	-	-	1
Martial arts including Tai Chi	0	1	3	2	1	-	-	1
Skiing/snowboarding	4	0	1	1	-	1	0	1
Table tennis	6	8	1	3	2	0	-	3
Tenpin bowling	2	3	4	1	1	0	-	2
Any other sport or exercise[a]	8	8	4	4	5	4	1	5

Continued…

Table 3.4 - *Continued*

Aged 16 and over who took part in any sport/exercise *2016*

Participation in activity during last four weeks	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Women								
Any sport or exercise	70	64	59	47	44	38	25	51
No sport or exercise	30	36	41	53	56	62	75	49
Swimming	17	20	20	15	11	8	2	14
Cycling	9	6	9	8	7	2	1	6
Workout at a gym/Exercise bike/ Weight training	35	25	17	13	9	5	1	15
Aerobics/Keep fit/ Gymnastics/ Dance for fitness	12	16	11	12	9	12	6	11
Any other type of dancing	10	7	6	4	7	5	5	6
Running/jogging	22	16	14	9	4	1	-	10
Football/rugby	2	2	2	0	-	-	-	1
Badminton/tennis	5	1	3	4	1	2	-	2
Exercises (eg press-ups, sit ups)	31	26	17	11	11	4	6	15
Bowls	1	1	1	0	1	5	3	1
Fishing/angling	2	1	1	0	-	-	0	1
Golf	1	1	0	1	2	4	1	2
Hillwalking/rambling	15	10	11	10	12	6	4	10
Snooker/billiards/pool	5	3	2	1	1	0	-	2
Aqua-robics/ aquafit/ exercise class in water	1	2	1	2	2	2	0	2
Yoga/pilates	10	11	11	9	8	6	-	8
Athletics	1	-	0	-	0	-	-	0
Basketball	4	0	0	0	0	-	-	1
Canoeing/Kayaking	2	1	1	1	-	0	-	1
Climbing	-	1	1	1	-	-	-	0
Horse riding	4	0	1	1	1	-	-	1
Ice skating	-	2	1	0	-	-	-	0
Martial arts including Tai Chi	0	-	-	1	1	2	1	1
Skiing/snowboarding	1	2	-	1	0	-	-	1
Table tennis	8	1	1	1	1	0	-	2
Tenpin bowling	7	3	2	1	1	0	-	2
Any other sport or exercise[a]	15	4	2	2	1	1	0	4

Continued…

Table 3.4 - *Continued*

Aged 16 and over who took part in any sport/exercise *2016*

Participation in activity during last four weeks	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
All adults								
Any sport or exercise	78	70	63	54	47	41	30	56
No sport or exercise	22	30	37	46	53	59	70	44
Swimming	16	15	19	16	10	7	2	13
Cycling	13	10	13	12	9	4	2	10
Workout at a gym/Exercise bike/ Weight training	37	28	17	13	10	5	1	17
Aerobics/Keep fit/ Gymnastics/ Dance for fitness	10	12	8	6	6	7	5	8
Any other type of dancing	6	5	4	2	4	3	4	4
Running/jogging	29	19	15	10	5	1	0	12
Football/rugby	19	14	7	3	1	0	-	7
Badminton/tennis	5	2	3	4	1	1	-	3
Exercises (eg press-ups, sit ups)	36	24	17	12	11	6	6	16
Bowls	1	1	1	1	2	5	7	2
Fishing/angling	2	2	2	3	1	1	1	2
Golf	2	5	5	5	6	7	4	5
Hillwalking/rambling	12	11	10	12	11	7	5	10
Snooker/billiards/pool	12	7	5	3	1	2	1	4
Aqua-robics/ aquafit/ exercise class in water	1	1	0	1	1	2	0	1
Yoga/pilates	7	7	7	6	5	4	0	5
Athletics	3	0	0	0	0	0	-	1
Basketball	6	1	0	0	0	-	-	1
Canoeing/Kayaking	2	1	1	1	0	0	-	1
Climbing	3	0	2	1	0	-	-	1
Horse riding	2	0	1	1	1	-	-	1
Ice skating	1	2	0	0	-	-	-	1
Martial arts including Tai Chi	0	1	1	1	1	1	0	1
Skiing/snowboarding	3	1	0	1	0	0	0	1
Table tennis	7	4	1	2	2	0	-	3
Tenpin bowling	5	3	3	1	1	0	-	2
Any other sport or exercise[a]	11	6	3	3	3	3	0	4

Continued…

Table 3.4 - *Continued*

Aged 16 and over who took part in any sport/exercise *2016*

Participation in activity during last four weeks	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
Bases (weighted):								
Men	*286*	*338*	*320*	*380*	*326*	*254*	*167*	*2072*
Women	*283*	*353*	*338*	*407*	*344*	*281*	*236*	*2243*
All adults	*569*	*691*	*658*	*788*	*670*	*535*	*403*	*4315*
Bases (unweighted):								
Men	*168*	*213*	*265*	*341*	*360*	*336*	*208*	*1891*
Women	*198*	*325*	*347*	*440*	*433*	*400*	*284*	*2427*
All adults	*366*	*538*	*612*	*781*	*793*	*736*	*492*	*4318*

a Other sports or exercise include all named sports in the questionnaire, in which less than 0.5% of the adult population took part, i.e. cricket, curling, hockey, netball, powerboating, rowing, sailing, shinty, skateboarding, subaqua, surfing, volleyball and waterskiing, plus any sport or form of exercise which was not listed on the questionnaire

Table 3.5 Proportion of children meeting physical activity guideline over an average week, (including and excluding activity at school), 1998 to 2016

Aged 2-15 *1998 - 2016*

Proportion meeting guideline[a,b]	1998	2003	2008	2009	2010	2011	2012	2013	2014	2015	2016
	%	%	%	%	%	%	%	%	%	%	%
Boys											
Excluding activity at school	72	74	72	69	68	69	66	70	73	71	73
Including activity at school	n/a	n/a	77	75	75	76	73	78	79	77	79
Girls											
Excluding activity at school	59	63	56	58	62	62	58	64	67	61	64
Including activity at school	n/a	n/a	64	66	70	70	68	72	73	69	72
All children											
Excluding activity at school	65	69	64	64	65	65	62	67	70	66	68
Including activity at school	n/a	n/a	71	71	72	73	70	75	76	73	76
Bases (weighted):											
Boys	*1088*	*1478*	*776*	*1142*	*784*	*867*	*791*	*825*	*735*	*616*	*677*
Girls	*1032*	*1424*	*721*	*1096*	*743*	*830*	*748*	*777*	*711*	*617*	*666*
All children	*2120*	*2903*	*1497*	*2237*	*1527*	*1697*	*1539*	*1602*	*1446*	*1233*	*1343*
Bases (unweighted):											
Boys	*1972*	*1428*	*750*	*1142*	*811*	*841*	*753*	*815*	*723*	*625*	*653*
Girls	*1881*	*1444*	*737*	*1085*	*694*	*826*	*774*	*753*	*721*	*604*	*672*
All children	*3853*	*2872*	*1487*	*2227*	*1505*	*1667*	*1527*	*1568*	*1444*	*1229*	*1325*

a At least 60 minutes of activity on all 7 days in previous week

b Children aged 2-3 were not asked about school activities, children aged 4 were included if they had started school

Table 3.6 Proportion of children meeting physical activity guideline over an average week, (including and excluding activity at school), 2016, by age and sex

Aged 2-15 *2016*

Proportion meeting guideline[a,b]	Age					Total
	2-4	5-7	8-10	11-12	13-15	
	%	%	%	%	%	%
Boys						
Excluding activity at school	77	77	73	78	58	73
Including activity at school	77	83	81	86	72	79
Girls						
Excluding activity at school	77	71	73	53	36	64
Including activity at school	77	81	80	66	49	72
All children						
Excluding activity at school	77	74	73	65	48	68
Including activity at school	77	82	80	76	61	76
Bases (weighted):						
Boys	*144*	*151*	*156*	*96*	*130*	*677*
Girls	*152*	*157*	*147*	*98*	*113*	*666*
All children	*295*	*308*	*303*	*194*	*243*	*1343*
Bases (unweighted):						
Boys	*136*	*160*	*154*	*87*	*116*	*653*
Girls	*167*	*164*	*138*	*93*	*110*	*672*
All children	*303*	*324*	*292*	*180*	*226*	*1325*

a At least 60 minutes of activity on all 7 days in previous week

b Children aged 2-3 were not asked about school activities, children aged 4 were included if they had started school

Table 3.7 Proportion of children meeting physical activity guideline over an average week, (including and excluding activity at school), 2016, by area deprivation and sex

Aged 2 - 15 *2016*

Proportion meeting guideline[a,b]	Scottish Index of Multiple Deprivation				
	5th (Least deprived)	4th	3rd	2nd	1st (Most deprived)
	%	%	%	%	%
Boys					
Excluding activity at school	74	73	80	74	63
Including activity at school	84	77	84	81	72
Girls					
Excluding activity at school	66	57	74	64	59
Including activity at school	75	66	78	74	68
All children					
Excluding activity at school	70	65	77	69	61
Including activity at school	79	71	81	77	70
Bases (weighted):					
Boys	*145*	*146*	*131*	*108*	*146*
Girls	*152*	*131*	*144*	*108*	*130*
All children	*297*	*278*	*275*	*217*	*277*
Bases (unweighted):					
Boys	*137*	*143*	*130*	*100*	*143*
Girls	*155*	*143*	*142*	*108*	*124*
All children	*292*	*286*	*272*	*208*	*267*

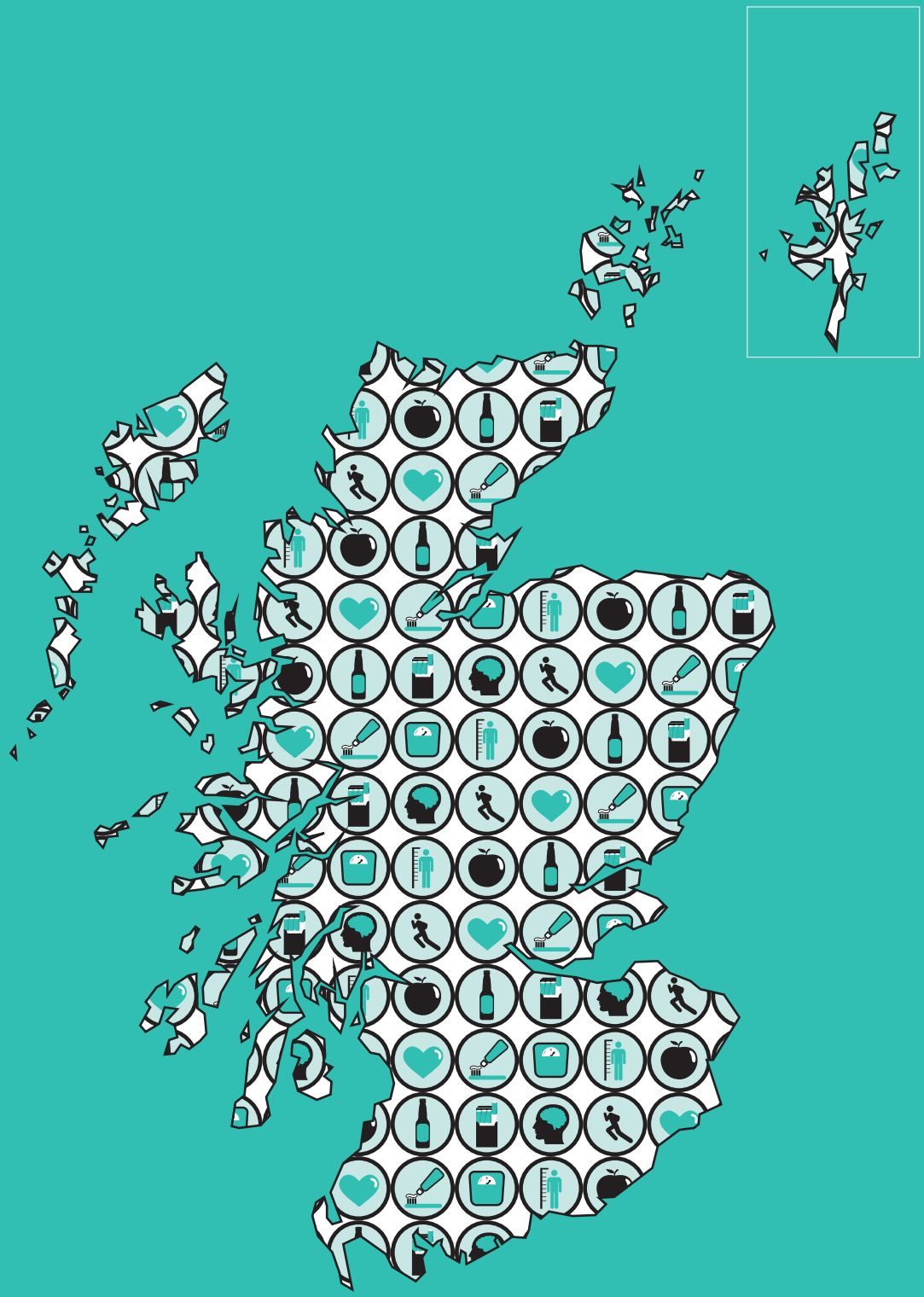
a At least 60 minutes of activity on all 7 days in previous week

b Children aged 2-3 were not asked about school activities, children aged 4 were included if they had started school

Table 3.8 Percentage of children participating in sport, 1998 to 2016

Aged 2-15 *1998 - 2016*

Proportion meeting guideline[a,b]	1998	2003	2008	2009	2010	2011	2012	2013	2014	2015	2016
	%	%	%	%	%	%	%	%	%	%	%
Boys											
Yes	72	74	74	76	73	72	67	71	68	69	70
No	28	26	26	24	27	28	33	29	32	31	30
Girls											
Yes	65	69	67	70	67	67	65	63	65	66	67
No	35	31	33	30	33	33	35	37	35	34	33
All children											
Yes	69	72	71	73	70	69	66	67	67	68	68
No	31	28	29	27	30	31	34	33	33	32	32
Bases (weighted):											
Boys	*1096*	*1514*	*790*	*1155*	*794*	*878*	*802*	*830*	*742*	*627*	*690*
Girls	*1046*	*1448*	*736*	*1110*	*763*	*838*	*759*	*788*	*720*	*627*	*673*
All children	*2142*	*2961*	*1526*	*2265*	*1556*	*1716*	*1561*	*1617*	*1462*	*1254*	*1364*
Bases (unweighted):											
Boys	*1987*	*1462*	*763*	*1156*	*823*	*853*	*763*	*819*	*729*	*635*	*666*
Girls	*1905*	*1467*	*752*	*1102*	*711*	*835*	*784*	*762*	*730*	*612*	*679*
All children	*3892*	*2929*	*1515*	*2258*	*1534*	*1688*	*1547*	*1581*	*1459*	*1247*	*1345*

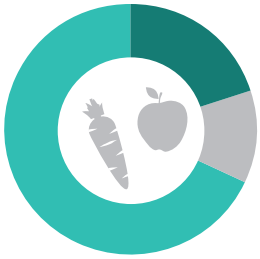


Chapter 4

Diet

SUMMARY

20% of adults
met the 5-a-day recommendation, showing little change over recent years



12%
did not consume any fruit or veg

- Average daily consumption of fruit and vegetables for adults reduced from 3.3 portions in 2008 to 3.0 portions in 2016.
- In 2016 adults mean consumption of fruit and vegetables was lowest for those aged 16-24 (2.5 portions) and highest among those aged 55-64 (3.3 portions).
- In 2016 more women (22%) ate the recommended 5-a-day portions of fruit and vegetables than men (17%).

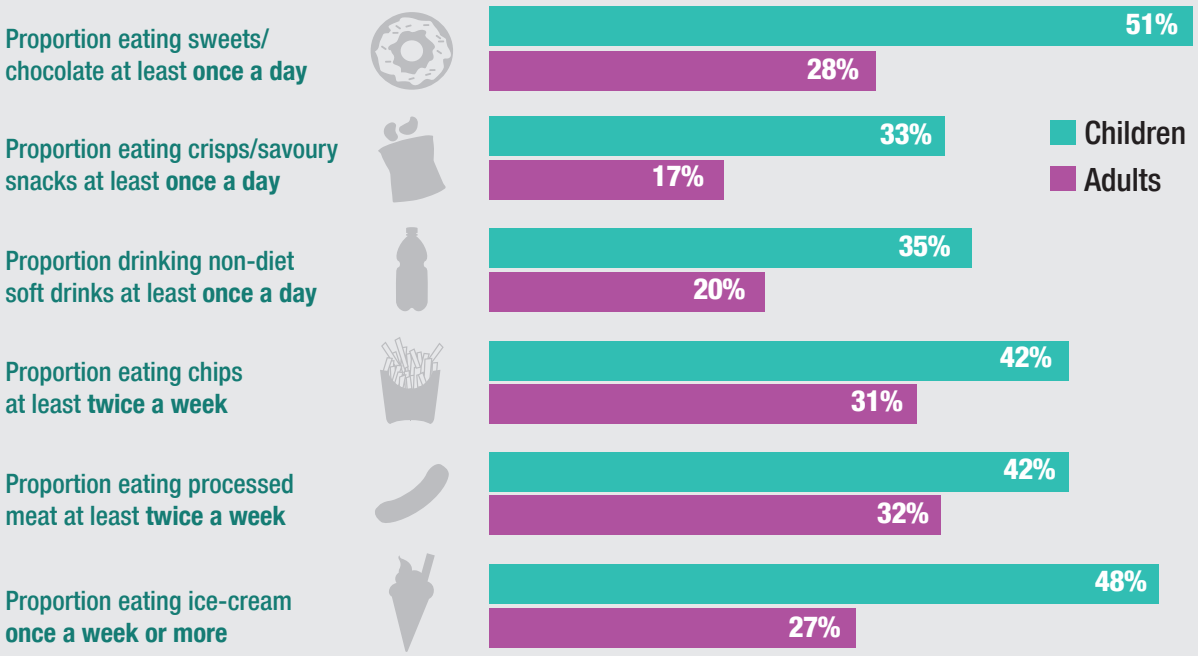
- In 2016, 13% of children aged 2-15 met the 5-a-day fruit and vegetables recommendations on the previous day, the proportion remaining relatively stable since 2008.
- In 2015/2016 the proportion of girls meeting the 5-a-day guideline at 15% was higher than boys at 11%.
- Consumption of non-diet soft drinks at least once a day amongst adults fell from 27% in 2014 to 20% in 2016.
- Biscuit consumption at least once a day for adults also decreased from 34% in 2008 to 28% in 2016.
- Around a third (32%) of adults ate oily fish in 2016, a significant increase from 25% in 2008 and 2014.
- The level of consumption of all foods and drinks high in fat and/or sugar tended to be higher among men.

Almost twice as many men consumed processed meat products at least twice a week than women.

42% Men

23% Women

Overall, children tended to consume foods and drinks high in fat and/or sugar more often than adults.



4 DIET

Ian Montagu

4.1 INTRODUCTION

According to the Global Nutrition Report, poor quality diet is the primary risk factor in the global burden of disease[1]. The risk of many non-communicable diseases, including cardiovascular disease, Type 2 diabetes and certain types of cancer is affected by the foods people consume. Estimates from international comparisons have suggested that around 30% of cases of cancer[2] and cardiovascular disease[3] worldwide could be prevented by changes in diet, both through improvements in nutritional content and reductions in body mass[4].

Early research on diet and chronic diseases focussed on the role of saturated fat, and fruit and vegetable intake considered together. However recent studies have shown that vegetable consumption is more important than fruit consumption in explaining reduced risks of certain types of breast cancer[5], stroke[6], and diabetes[7], while fruit consumption has been found to be more strongly associated with reduced risk of coronary heart disease in women[6] and oesophagal and stomach cancers[8].

Other aspects of diet, including the potentially positive effects of fibre and wholegrains[9], oily fish intake[10,11] and antioxidant vitamins[12] have been studied in relation to cardiovascular disease and cognitive decline in later life. Folates have been shown to have a role in the prevention of neural tube defects[13]; vitamin D and calcium are determinants of bone health[14]; sugar intake is associated wtih dental decay[15]; and salt intake is linked to the development of hypertension[16]. A link between consumption of red and processed meats in bowel disease has been proposed[17,18], while it has been suggested that free sugars may have a particular role in the development of obesity and Type 2 diabetes[19]. Sugary drinks have been identified as the key contributor to total sugar intake in children aged 11-18 years and a source of empty calories[20]. Combined effects of different foods in healthy dietary patterns such as the Mediterranean Diet have been shown to be associated with brain changes in later life[21].

Given the broad range of health conditions which may be influenced by diet it is difficult to estimate the economic and social costs of poor eating habits, but some examples can highlight the potential benefits of improving the diet of the population. Treatment of cardiovascular disease, including hypertension, and Type 2 diabetes, represent significant costs to the NHS, as do treatment of dental decay in children and bone disease in adults. Evidence on the economic costs of risk factors for chronic disease suggests that poor diet is a greater burden on the NHS than smoking, alcohol consumption, overweight and obesity or physical inactivity[22].

Surveys of household food intake and of children's diet in Scotland in 2006 and 2010 have highlighted socio-economic inequalities in consumption of a wide range of food groups such as fruit and vegetables and soft drinks. However, differences in the fat and sugar content of the diet between those in more versus less deprived areas are not marked[23,24,25,26].

4.1.1 Policy background

Poor diet is a long-standing challenge to improving health in Scotland. The high level of intake of energy-dense foods high in fat, sugar and salt is a particular problem with wide-ranging consequences for the health of the population[27]. In response to this, a healthy eating culture and access to affordable, fresh and nutritious food is a national priority for the Scottish Government in its aim to become a **Good Food Nation**[28].

The **Scottish Dietary Goals**[29] **replaced the previous Scottish Dietary Targets in 2013 and** were revised in 2016[29]. The revised goals include:

- The World Health Organisation 5-a-day recommendation for adults (to consume at least five varied 80g portions of fruit and vegetables per day).
- To reduce salt intake from around 9g to 6g per day for adults.
- To reduce average calorie intake by 120 kcal per day and average intake of red meat to 70g per day.
- To provide advice on limiting fat and sugar intake and increasing consumption of fibre and oil-rich fish.
- To reduce the average intake of free sugars to 5% of total dietary energy.
- To increase intake of dietary fibre to 30g per day for adults.
- To maintain intakes of starchy carbohydrates at 50% of total dietary energy.

Existing UK healthy eating advice was updated as the **Eatwell Guide** in 2016 to illustrate the proportions and types of foods from major food groups which would make up a healthy diet[30]. Following recommendations from the Scientific Advisory Committee on Nutrition (SACN), Scottish Government advice on vitamin D for all age groups has also been updated[31]. The Scottish Government is funding a number of programmes aimed at encouraging people to make healthier choices in the way they shop, cook and eat, through its **Eat Better Feel Better** campaign[32].

The Scottish Government will be consulting with stakeholders later this year in order to develop a new **Diet and Obesity Strategy**, which will include a range of actions to deliver a new approach to diet and healthy weight management. The recently published **Programme for Government 2017-18** also sets out the Scottish Government's intention to progress measures limiting the marketing of products high in fat, sugar and salt[33].

Food in schools has been the main focus of improving the poor diet of children in Scotland. The **Schools Food and Nutrition** legislation introduced in 2007 states the responsibilities of local authorities to ensure that schools provide food and drink of an appropriate nutritional standard[34]. At the same time, the Scottish Government published

Healthy Eating in Schools, a guide to implementing the legislation[35]. The foods available to children who leave school at lunchtimes have also been considered in the **Beyond the School Gate** advice to caterers in the vicinity of schools[36]. The Scottish Government developed the **Better Eating Better Learning** guidance in 2014 which provided refreshed guidance to a range of stakeholders (schools, local authorities, caterers, procurement departments, parents, children and young people) to support them to work in partnership to make further improvements in school food and food education[37].

A key part of the **Health Promoting Health Service** is a focus towards the provision of healthier food choices in hospitals. All NHS-run restaurants for staff, visitors and patients now have the Healthyliving Award Plus as a mandatory requirement with all voluntary sector establishments holding the award. The **Healthcare Retail Standard** is being implemented in 2016-17 to ensure that any retail outlet in healthcare grounds provides a range of food items that are not high in fat, salt and sugar and that only foods which should be consumed more often or in greater amounts, e.g. fruit and vegetables, are promoted[38].

Specific measures which could be taken by retailers, manufacturers and caterers which would affect the wider population are outlined in the Scottish Government's **Supporting Healthy Choices** framework[39]. This is a voluntary framework based on four core principles. These are to:

- Put the health of children first in food-related decisions.
- Rebalance promotional activities.
- Support consumers and communities.
- Formulate healthier products.

Building on these existing policies and programmes, the Scottish Food Commission was convened recently to provide evidence-informed advice on approaches that will contribute most to making Scotland a Good Food nation and address the challenges of Scotland's food culture.

In 2016 the UK Government proposed a **soft drinks industry levy**[40] to be paid across the UK by producers and importers of soft drinks that contain added sugar with effect from April 2018. A public consultation on the proposed levy was undertaken later in the year[41] showing overwhelming support from medical and health based organisations and mainly opposition from manufacturers and trade bodies. Draft legislation was published at the end of 2016[42] and secondary legislation is due in 2017.

4.1.2 Reporting on diet in the Scottish Health Survey (SHeS)

This chapter provides information on fruit and vegetable consumption among adults and children from 2003 to 2016. Information on other adult and child eating habits are also provided.

Supplementary tables on diet, including analysis by socio-economic classification, household income and area deprivation are also published on the Scottish Health Survey website[43].

4.2 METHODS AND DEFINITIONS

4.2.1 Measuring fruit and vegetable consumption

The module of questions on fruit and vegetable consumption was designed with the aim of providing sufficient detail to monitor population-level adherence to the 5-a-day recommendation. These questions have been asked of all adults (aged 16 and over) participating in the survey since 2003 and of children aged 2 to 15 since 2008.

The module includes questions on consumption of the following food types in the 24 hours to midnight preceding the interview:

- vegetables (fresh, frozen or canned);
- salads;
- pulses;
- vegetables in composites (e.g. vegetable chilli);
- fruit (fresh, frozen or canned);
- dried fruit;
- fruit in composites (e.g. apple pie);
- fresh fruit juice.

A portion is defined as the conventional 80g of a fruit or vegetable. Since 80g is difficult to visualise, survey respondents were asked to describe the amount of each fruit or vegetable they consumed using more everyday terms, such as tablespoons, cereal bowls and slices. These everyday measures were then converted to 80g portions prior to analysis. Examples are given in the questionnaire to aid the recall process, for instance, tablespoons of vegetables, cereal bowls full of salad, pieces of medium sized fruit (e.g. apples) or handfuls of small fruits (e.g. raspberries). In spite of this, there may be some variation between participants' interpretation of how much they consumed. The following table shows the definitions of the portion sizes used for each food item included in the survey:

Food item	Portion size
Vegetables (fresh, frozen or canned)	3 tablespoons
Pulses (dried)	3 tablespoons
Salad	1 cereal bowlful
Vegetables in composites, such as vegetable chilli	3 tablespoons
Very large fruit, such as melon	1 average slice
Large fruit, such as grapefruit	Half a fruit
Medium fruit, such as apples	1 fruit
Small fruit, such as plums	2 fruits
Very small fruit, such as blackberries	2 average handfuls
Dried fruit	1 tablespoon
Fruit in composites, such as stewed fruit in apple pie	3 tablespoons
Frozen fruit/canned fruit	3 tablespoons
Fruit juice	1 small glass (150 ml)

Since the 5-a-day recommendation stresses both volume and variety, the number of portions of fruit juice, pulses and dried fruit is capped so that no more than one portion of each can contribute to the total number of portions consumed. Interviewers record full or half portions, but nothing smaller.

4.3 FRUIT AND VEGETABLE CONSUMPTION

4.3.1 Trends in adult fruit and vegetable consumption since 2003

Adults consumed a mean of 3.0 portions of fruit and vegetables per day in 2016. This mean level of adult fruit and vegetable consumption was the lowest recorded in the time series, with mean consumption among adults having previously ranged between 3.1-3.3.

In 2016, 20% (one fifth) of adults consumed the recommended five portions of fruit and vegetables on the previous day. This represents a significant decrease from 23% in 2009. It is the joint-lowest recorded proportion of adults meeting the 5-a-day guidelines in the time series (with 20% consuming 5 portions or more also found in 2012 and 2014). In 2016, the proportion of adults eating no fruit or vegetables on the previous day was the highest in the time series (12%), with levels having fluctuated between 9-11% in previous years.

At 3.2 portions a day, mean fruit and vegetable consumption among women in 2016 was 0.4 portions a day higher than among men (2.8 portions a day). This is the largest observed difference in mean fruit and vegetable consumption between men and women in the time series. In previous years, mean fruit and vegetable consumption among men has been measured at between 0.1 and 0.3 portions a day lower than among women.

The levels of women and men eating at least five portions of fruit and vegetables on the previous day in 2016 were significantly different. In 2016 the proportion of men meeting the 5-a-day guidelines on the previous day was 17%, the lowest in the time series, with levels fluctuating between 19% and 22% in previous survey years. The

number of women eating at least the recommended five portions of fruit and vegetables on the previous day in 2016 was 22%, having ranged between 20% and 25% since 2003.

In 2016, 14% of men ate no fruit or vegetables on the previous day (the highest level in the time series) compared with 9% of women. **Table 4.1**

4.3.2 Adult fruit and vegetable consumption in 2016, by age and sex

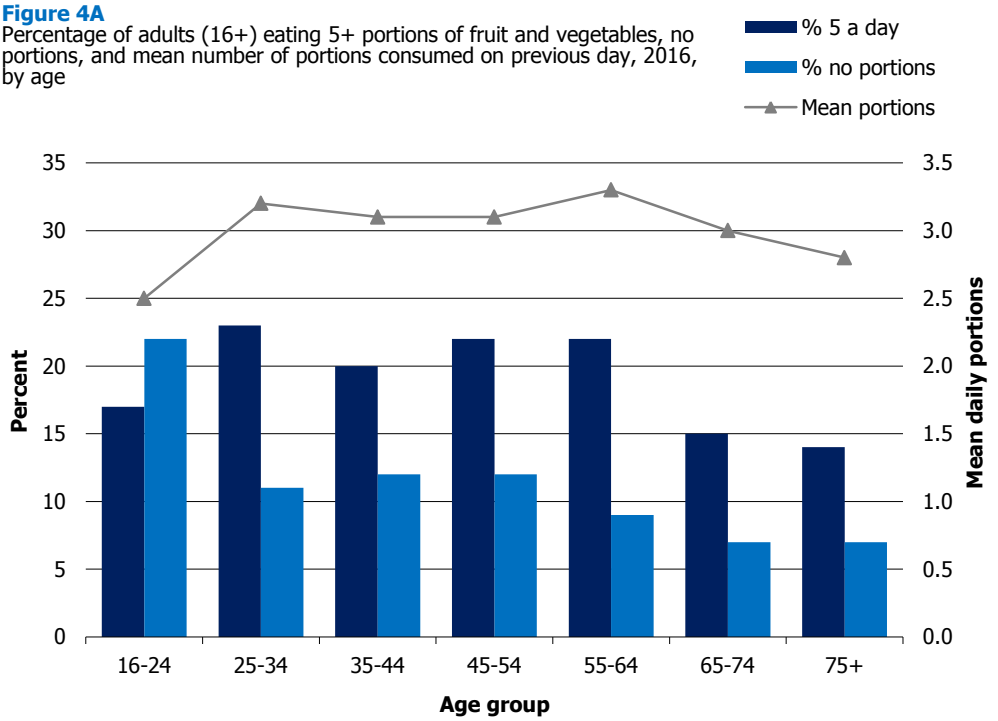
As in previous survey years, mean daily fruit and vegetable consumption in 2016 was lowest for those aged 16-24 (2.5 portions) and highest among those aged 55-64 (3.3 portions).

In 2016, those aged 16-24 and those aged 65 and over were least likely to have consumed at least five portions of fruit and vegetables on the previous day (17% and 15-14% respectively). Those aged 16-24 were more likely to have eaten no fruit or vegetables on the previous day than any other adult age group. The proportion of those aged 16-24 having eaten no fruit or vegetables on the previous day increased from 18% in 2015 to 22% in 2016.

The proportion of women not having eaten any fruit or vegetables on the previous day in 2016 was highest for those aged 16-24 (17%) and lowest for those aged 35-44 (6%) and 55 and over (7%). Of women aged between 16 and 64, 22-25% ate the recommended five portions of fruit and vegetables on the previous day, compared with 13% of women aged 75 and over.

The proportion of men not having eaten any fruit or vegetables on the previous day in 2016 was highest for those aged 16-24 (27%) and lowest for those aged 65 and over (7-8%). Men aged 16-24 were also least likely to have eaten five portions of fruit and vegetables on the previous day (11%). This compared with 21% in the age groups most likely to have met the 5-a-day guidelines (those aged 25-34 and 55-64). **Figure 4A, Table 4.2**

Figure 4A
Percentage of adults (16+) eating 5+ portions of fruit and vegetables, no portions, and mean number of portions consumed on previous day, 2016, by age



4.3.3 Trends in child fruit and vegetable consumption since 2003, 2008

Mean daily fruit and vegetable consumption among children aged 2-15 in 2016 was measured at 2.8 portions. Since the beginning of the time series in 2008 there has been little change in this level, measured at between 2.6 and 2.8 portions. Similar patterns were seen for 5-15 year olds in a time series that extends back to 2003.

There was no significant difference between girls and boys average consumption of fruit and vegetable portions per day. In 2016 boys aged 2-15 consumed a mean of 2.7 portions of fruit and vegetables per day, whilst girls consumed a mean of 2.9 portions. Mean fruit and vegetable consumption has ranged between 2.5 and 2.7 portions for boys aged 2-15, and between 2.7 and 2.9 portions for girls aged 2-15 since the start of the time series in 2008.

In 2016, of those aged 2-15, 13% ate the recommended five portions of fruit and vegetables on the previous day. The proportion of those aged 2-15 meeting the 5-a-day guidelines has fluctuated between 12-15% since the start of the time series in 2008.

In 2016, 9% of those aged 2-15 ate no fruit or vegetables on the previous day with levels fluctuating between 7% and 11% in previous years. **Table 4.3**

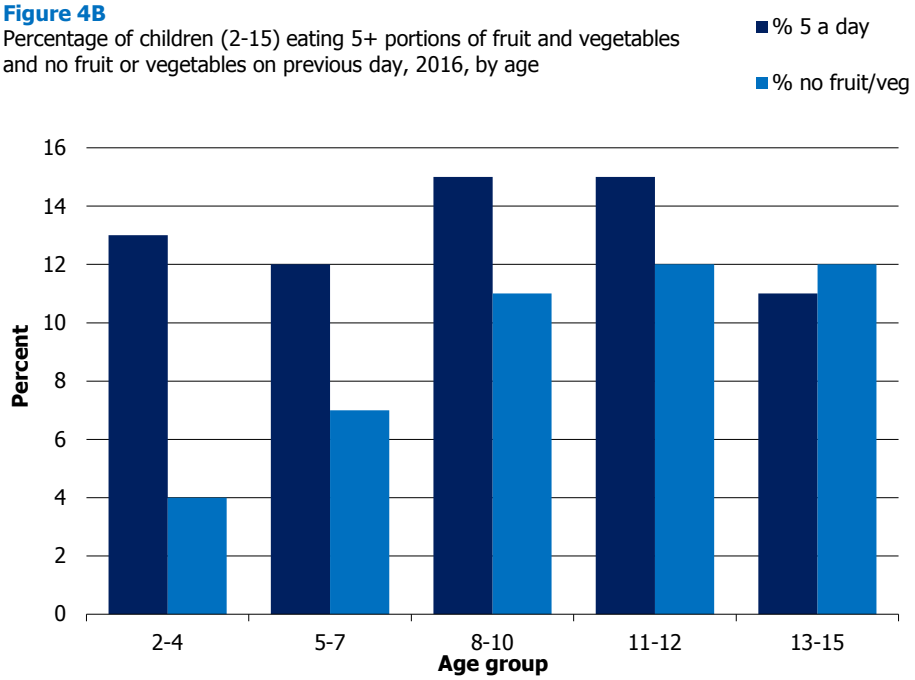
4.3.4 Child fruit and vegetable consumption, by age and sex for 2015/2016 combined

There were significant differences in the proportion of children meeting the 5-a-day guidelines on the previous day by sex, with 15% of girls and

11% of boys meeting the guideline. There was no clear pattern by age group (ranging between 11% and 15%).

However, there was a pattern by age group for the percentage of children eating no fruit or vegetables the previous day. Those aged 13-15 and 11-12 were most likely to have eaten no fruit or vegetables on the previous day (at 12%) and the percentage fell as age decreased. Among children aged 2-4 a comparatively low 4% had eaten no fruit or vegetables the previous day. There was no significant difference between the proportions of boys and girls who had eaten no fruit or vegetables on the previous day. **Figure 4B, Table 4.4**

Figure 4B
Percentage of children (2-15) eating 5+ portions of fruit and vegetables and no fruit or vegetables on previous day, 2016, by age



4.4 CONSUMPTION OF OTHER FOODS IN ADULTS, 2008-2016

4.4.1 Meat and fish

Of all adults, 57% consumed red meat at least twice a week in 2016. This represents a fall in red meat consumption from 2008, when 61% of adults ate red meat at least twice a week. This decline has been largely driven by women, 51% of whom consumed red meat at least twice a week in 2016 compared with 59% in 2008. In contrast, the number of men consuming red meat at least twice a week is identical to that in 2008 (64%).

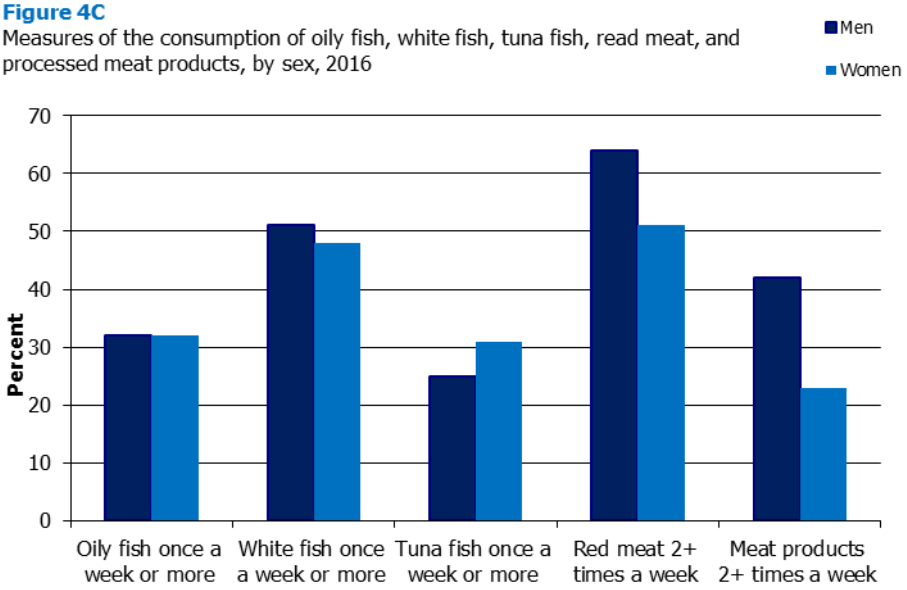
Around one third of all adults (32%) consumed processed meat products (such as pies or sausages) at least twice a week in 2016, with no significant change since 2008 (28%). Almost twice as many men consumed processed meat products at least twice a week than women (42% of men compared with 23% of women).

Around half of adults (49%) ate white fish at least once a week in 2016, while just over a quarter (28%) ate tuna fish at least once a week. These figures have not changed significantly since 2008. However, around a third of adults (32%) ate oily fish, such as salmon or mackerel, at least once a week in 2016, a significant increase from previous survey years where the highest level was 26% in 2012.

A higher proportion of women than men ate tuna fish at least once a week (31% of women, 25% of men), however the proportion of men and women eating white fish (48% of women, 51% of men) and oily fish (32% of women, 32% of men) once a week in 2016 was broadly similar.

Figure 4C, Table 4.5

Figure 4C
Measures of the consumption of oily fish, white fish, tuna fish, read meat, and processed meat products, by sex, 2016



4.4.2 Milk

In 2016, 72% of adults consumed skimmed or semi-skimmed milk in drinks or on breakfast cereal (as opposed to whole milk, other types of milk or no milk); remaining relatively stable since the start of the series.

There was no significant difference between proportions of men and women who had consumed either skimmed or semi-skimmed milk in drinks or on breakfast cereal in 2016. **Table 4.5**

4.4.3 Foods rich in starch and fibre

In 2016, 50% of adults ate potatoes, pasta or rice at least five times a week. Just under a third of adults (28%) ate high fibre and low sugar cereal at least five times a week. The proportion of adults eating at least 2-3 slices of high fibre bread a day was significantly less in 2016 (at 38%) than in 2008 (at 42%). There has been no significant change in potato, pasta or rice consumption at least 5 times a week or high fibre and low sugar cereal consumption at least 5 times a week since 2008.

As in 2014, a larger proportion of men than women ate high fibre bread every day in 2016 (42% of men compared with 34% of women).

Table 4.5

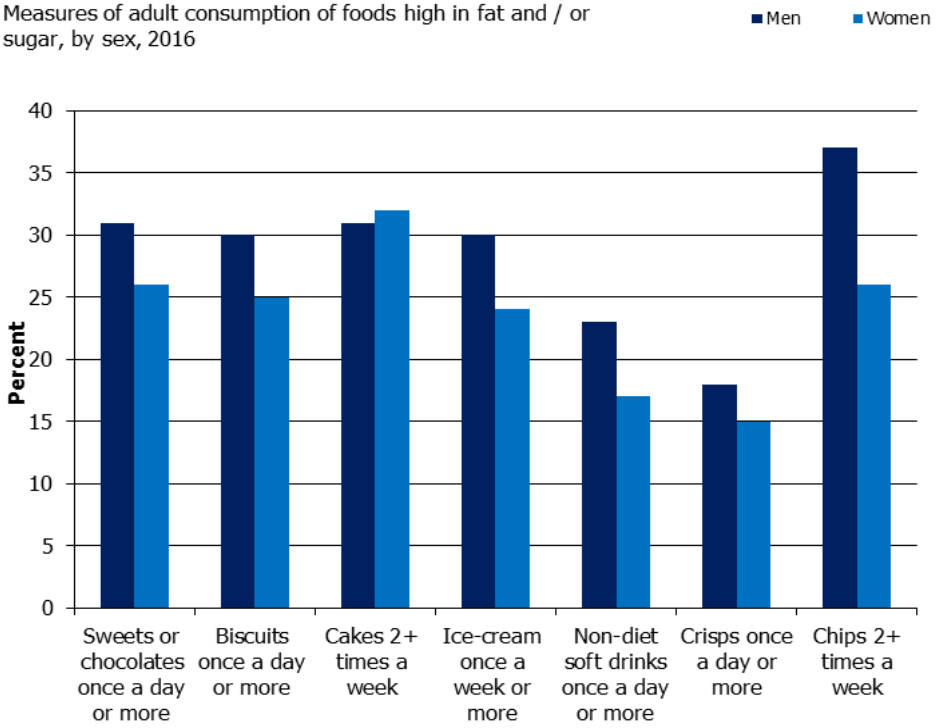
4.4.4 Foods and drinks high in fat and / or sugar

In 2016, 31% of adults consumed chips at least twice a week; 32% of adults ate cakes at least twice a week; 27% ate ice cream at least once a week; 28% of adults consumed sweets or chocolates at least once a day; 28% consumed biscuits at least once a day; and 17% consumed crisps or other savoury snacks at least once a day.

There has been a significant drop in the consumption of non-diet soft drinks amongst adults from 27% in 2014 to 20% in 2016. There has also been a downward trend in biscuit consumption once a day or more from 34% in 2008 to 28% in 2016. The consumption of other foods that are high in fat and / or sugar, or both, has not changed significantly since 2008.

The frequency of consumption of all foods and drinks high in fat and / or sugar was higher among men than women (with the exception of cakes for which consumption which was similar in men and women). The largest difference in consumption habits between men and women was observed in relation to chips, with 37% of men eating chips more than once a week compared with 26% of women. **Figure 4D, Table 4.5**

Figure 4D
Measures of adult consumption of foods high in fat and / or sugar, by sex, 2016



4.5 CONSUMPTION OF OTHER FOODS IN CHILDREN

4.5.1 Meat and fish

The same proportion of children consumed red meat at least twice a week in 2015/2016 as adults (57%) in 2016. There was no significant difference in the proportion of girls and boys eating red meat at least twice a week in 2015/2016.

Consumption of processed meat products, such as pies or sausages, at least twice a week was higher amongst children (42%) in 2015/2016 than amongst adults (32%) in 2016. In 2015/2016 more boys consumed processed meat products at least twice a week than girls (47% of boys compared with 36% of girls).

Just over a quarter of children (27%) ate tuna fish at least once a week in 2015/16, while around half (51%) ate white fish at least once a week. These figures are similar to those measured among adults in 2016. However, significantly fewer children in 2015/2016 than adults in 2016 ate oily fish, such as salmon and mackerel, at least once a week (16% of children compared with 32% of adults). Tuna fish was consumed more frequently by girls (29%) than boys (25%). There were no other significant differences between boys and girls in the consumption of fish. **Table 4.6**

4.5.2 Milk

In 2015/2016, 58% of children consumed skimmed or semi-skimmed milk in drinks or on breakfast cereal (as opposed to whole milk, other types of milk or no milk). A slightly higher proportion of girls than boys consumed either skimmed or semi-skimmed milk in drinks or on breakfast cereal in 2015/2016 (60% of girls compared with 55% of boys). **Table 4.6**

4.5.3 Foods rich in starch and fibre

In 2015/16, 32% of all children ate at least 2-3 slices of high fibre bread a day. In 2015/16, half of all children (50%) ate potatoes, pasta or rice at least five times a week, whilst 29% of children ate high fibre and low sugar cereal at least five times a week. These proportions were similar to those measured among adults in 2016.

A larger proportion of boys than girls ate high fibre bread every day in 2015/16 (35% of boys compared with 29% of girls). The proportions of boys and girls eating potatoes, pasta or rice at least five times a week were broadly similar (49% for boys and 50% for girls). High fibre and low sugar cereal 5-6 times a week were also similar among girls and boys (30% for boys and 27% for girls). **Table 4.6**

4.5.4 Foods and drinks high in fat and / or sugar

In 2015/16, 42% of children consumed chips at least twice a week (compared with 31% of adults in 2016); 33% of children ate cakes at

least twice a week; 48% ate ice cream at least once a week (compared with 27% of adults in 2016); 51% of children consumed sweets or chocolates at least once a day (compared with 28% of adults in 2016); 32% consumed biscuits at least once a day; 33% consumed crisps or other savoury snacks at least once a day (compared with 17% of adults in 2016); and 35% drank non-diet soft drinks at least once a day (compared with 20% of adults in 2016). The frequency of consumption of foods high in fat and / or sugar was similar among boys and girls with the exception of biscuits once a day or more, where consumption for boys was higher (34%) than for girls (30%). **Table 4.6**

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Table list

Table 4.1 Adult fruit and vegetable consumption, 2003 to 2016

Aged 16 and over *2003 - 2016*

Portions per day	2003	2008	2009	2010	2011	2012	2013	2014	2015	2016
	%	%	%	%	%	%	%	%	%	%
Men										
None	11	10	11	12	10	11	11	12	13	14
5 portions or more	20	20	22	20	20	19	22	20	19	17
Mean	3.0	3.1	3.1	3.1	3.1	3.0	3.2	3.0	3.0	2.8
Standard error of the mean	0.06	0.07	0.05	0.06	0.05	0.08	0.07	0.07	0.07	0.07
Median	2.7	2.7	2.8	2.7	2.7	2.7	3.0	2.5	2.5	2.3
Women										
None	8	7	7	9	8	9	8	9	9	9
5 portions or more	22	24	25	23	23	21	22	20	22	22
Mean	3.2	3.4	3.4	3.3	3.3	3.2	3.3	3.2	3.3	3.2
Standard error of the mean	0.05	0.06	0.05	0.05	0.05	0.05	0.06	0.07	0.07	0.07
Median	3.0	3.0	3.0	3.0	3.0	2.8	3.0	3.0	3.0	2.7
All adults										
None	9	9	9	10	9	10	9	10	11	12
5 portions or more	21	22	23	22	22	20	22	20	21	20
Mean	3.1	3.3	3.3	3.2	3.2	3.1	3.2	3.1	3.1	3.0
Standard error of the mean	0.05	0.05	0.04	0.04	0.04	0.05	0.05	0.06	0.06	0.06
Median	2.7	3.0	3.0	3.0	3.0	2.7	3.0	2.7	2.7	2.7
Bases (weighted):										
Men	*3834*	*3087*	*3594*	*3465*	*3606*	*2309*	*2343*	*2234*	*2395*	*2073*
Women	*4281*	*3375*	*3926*	*3775*	*3931*	*2502*	*2547*	*2420*	*2597*	*2244*
All adults	*8115*	*6462*	*7520*	*7239*	*7537*	*4811*	*4890*	*4654*	*4992*	*4316*
Bases (unweighted):										
Men	*3590*	*2840*	*3283*	*3112*	*3275*	*2126*	*2138*	*2066*	*2244*	*1892*
Women	*4526*	*3621*	*4241*	*4127*	*4260*	*2686*	*2754*	*2589*	*2750*	*2427*
All adults	*8116*	*6461*	*7524*	*7239*	*7535*	*4812*	*4892*	*4655*	*4994*	*4319*

Table 4.2 Adult fruit and vegetable consumption, 2016, by age and sex

Aged 16 and over *2016*

Portions per day	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
None	27	12	18	12	11	7	8	14
Less than 1 portion	6	4	6	5	5	5	6	5
1 portion or more but less than 2	22	25	15	18	20	18	20	20
2 portions or more but less than 3	18	14	17	24	21	21	20	19
3 portions or more but less than 4	10	13	15	14	14	21	20	15
4 portions or more but less than 5	6	12	11	9	9	13	11	10
5 portions or more	11	21	19	18	21	14	15	17
Mean	2.1	2.9	2.9	2.9	3.1	3.0	2.8	2.8
Standard error of the mean	0.23	0.21	0.17	0.15	0.15	0.13	0.14	0.07
Median	1.7	2.5	2.7	2.5	2.5	2.7	2.3	2.3
Women								
None	17	10	6	12	7	7	7	9
Less than 1 portion	12	5	5	6	7	6	8	7
1 portion or more but less than 2	17	19	18	18	16	16	14	17
2 portions or more but less than 3	13	15	17	17	15	23	29	18
3 portions or more but less than 4	9	15	17	13	19	21	18	16
4 portions or more but less than 5	9	13	15	9	14	12	12	12
5 portions or more	23	24	22	25	23	17	13	22
Mean	2.8	3.4	3.4	3.4	3.4	3.0	2.8	3.2
Standard error of the mean	0.31	0.17	0.16	0.16	0.13	0.10	0.12	0.07
Median	2.0	3.0	3.0	2.7	3.0	2.7	2.7	2.7
All adults								
None	22	11	12	12	9	7	7	12
Less than 1 portion	9	4	5	5	6	6	8	6
1 portion or more but less than 2	19	22	17	18	18	17	17	18
2 portions or more but less than 3	15	14	17	20	18	22	25	18
3 portions or more but less than 4	9	14	16	13	16	21	19	15
4 portions or more but less than 5	7	12	13	9	12	12	11	11
5 portions or more	17	23	20	22	22	15	14	20
Mean	2.5	3.2	3.1	3.1	3.3	3.0	2.8	3.0
Standard error of the mean	0.21	0.15	0.12	0.13	0.11	0.09	0.10	0.06
Median	1.7	2.7	2.8	2.5	2.8	2.7	2.7	2.7

Continued…

Table 4.2 - *Continued*

Aged 16 and over *2016*

Portions per day	**Age**							**Total**
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
Bases (weighted):								
Men	*286*	*338*	*320*	*380*	*326*	*255*	*167*	*2073*
Women	*283*	*353*	*338*	*407*	*344*	*281*	*236*	*2244*
All adults	*569*	*691*	*658*	*788*	*670*	*536*	*403*	*4316*
Bases (unweighted):								
Men	*168*	*213*	*265*	*341*	*360*	*337*	*208*	*1892*
Women	*198*	*325*	*347*	*440*	*433*	*400*	*284*	*2427*
All adults	*366*	*538*	*612*	*781*	*793*	*737*	*492*	*4319*

Table 4.3 Child fruit and vegetable consumption, 2003 to 2016

Aged 2-15 *2003 - 2016*

Portions per day	2003	2008	2009	2010	2011	2012	2013	2014	2015	2016
	%	%	%	%	%	%	%	%	%	%
Boys										
Total 5-15										
None	12	13	10	12	11	13	12	12	10	11
5 portions or more	12	14	13	11	12	11	13	15	11	11
Mean	2.6	2.6	2.6	2.5	2.6	2.4	2.6	2.7	2.6	2.6
Standard error of the mean	0.07	0.11	0.07	0.10	0.09	0.10	0.10	0.13	0.10	0.10
Median	2.0	2.0	2.3	2.3	2.3	2.0	2.3	2.2	2.3	2.2
Total 2-15										
None	n/a	11	9	11	10	12	11	10	9	10
5 portions or more	n/a	14	14	12	13	12	13	13	12	11
Mean	n/a	2.7	2.7	2.6	2.7	2.5	2.7	2.7	2.7	2.7
Standard error of the mean	n/a	0.09	0.06	0.09	0.08	0.09	0.09	0.11	0.09	0.08
Median	n/a	2.3	2.4	2.3	2.5	2.2	2.3	2.3	2.3	2.3
Girls										
Total 5-15										
None	12	9	10	11	10	11	11	10	6	9
5 portions or more	13	14	15	12	11	12	12	13	13	15
Mean	2.6	2.8	2.8	2.6	2.7	2.8	2.7	2.8	2.8	2.8
Standard error of the mean	0.07	0.10	0.09	0.09	0.09	0.10	0.09	0.11	0.12	0.11
Median	2.0	2.5	2.3	2.5	2.5	2.7	2.7	2.3	2.5	2.7
Total 2-15										
None	n/a	8	9	10	9	9	10	9	5	8
5 portions or more	n/a	13	16	13	12	14	13	14	13	15
Mean	n/a	2.9	2.9	2.7	2.8	2.9	2.8	2.8	2.8	2.9
Standard error of the mean	n/a	0.09	0.08	0.08	0.08	0.09	0.09	0.10	0.10	0.09
Median	n/a	2.7	2.7	2.5	2.5	2.7	2.7	2.7	2.5	2.7

Continued…

Table 4.3 - *Continued*

Aged 2-15 *2003 to 2016*

Portions per day	2003	2008	2009	2010	2011	2012	2013	2014	2015	2016
	%	%	%	%	%	%	%	%	%	%
All children										
Total 5-15										
None	12	11	10	12	10	12	12	11	8	10
5 portions or more	12	14	14	12	12	11	12	14	12	13
Mean	2.6	2.7	2.7	2.6	2.6	2.6	2.7	2.7	2.7	2.7
Standard error of the mean	0.05	0.08	0.06	0.07	0.07	0.08	0.08	0.09	0.08	0.09
Median	2.0	2.3	2.3	2.3	2.3	2.3	2.5	2.3	2.3	2.3
Total 2-15										
None	n/a	10	9	11	9	11	10	10	7	9
5 portions or more	n/a	13	15	12	13	13	13	14	12	13
Mean	n/a	2.8	2.8	2.6	2.7	2.7	2.7	2.8	2.7	2.8
Standard error of the mean	n/a	0.07	0.05	0.07	0.06	0.07	0.07	0.08	0.07	0.07
Median	n/a	2.5	2.5	2.3	2.5	2.5	2.5	2.3	2.5	2.5
Bases (weighted):										
Boys 5-15	*1225*	*618*	*910*	*621*	*686*	*614*	*637*	*576*	*492*	*541*
Boys 2-15	*n/a*	*791*	*1153*	*792*	*881*	*800*	*830*	*742*	*626*	*689*
Girls 5-15	*1166*	*591*	*867*	*591*	*652*	*588*	*607*	*551*	*472*	*520*
Girls 2-15	*n/a*	*736*	*1108*	*759*	*835*	*759*	*787*	*720*	*627*	*674*
All children 5-15	*2391*	*1209*	*1777*	*1212*	*1338*	*1202*	*1243*	*1128*	*964*	*1062*
All children 2-15	*n/a*	*1527*	*2261*	*1551*	*1716*	*1559*	*1616*	*1461*	*1253*	*1363*
Bases (unweighted):										
Boys 5-15	*1152*	*591*	*923*	*629*	*649*	*580*	*608*	*563*	*489*	*525*
Boys 2-15	*n/a*	*764*	*1153*	*821*	*855*	*761*	*819*	*729*	*634*	*665*
Girls 5-15	*1170*	*597*	*837*	*532*	*619*	*602*	*554*	*567*	*456*	*511*
Girls 2-15	*n/a*	*752*	*1100*	*708*	*833*	*784*	*761*	*730*	*612*	*680*
All children 5-15	*2322*	*1188*	*1760*	*1161*	*1268*	*1182*	*1162*	*1130*	*945*	*1036*
All children 2-15	*n/a*	*1516*	*2253*	*1529*	*1688*	*1545*	*1580*	*1459*	*1246*	*1345*

Table 4.4 Child fruit and vegetable consumption, 2016, by age and sex

Aged 2-15 *2016*

Portions per day	Age					Total
	2-4	5-7	8-10	11-12	13-15	
	%	%	%	%	%	%
Boys						
None	6	6	12	11	16	10
Less than 1 portion	2	7	6	4	1	4
1 portion or more but less than 2	22	19	20	33	26	23
2 portions or more but less than 3	20	27	23	20	21	22
3 portions or more but less than 4	22	17	18	12	14	17
4 portions or more but less than 5	17	14	10	7	10	12
5 portions or more	11	11	11	13	12	11
Mean	2.9	2.7	2.7	2.4	2.5	2.7
Standard error of the mean	0.14	0.14	0.20	0.22	0.24	0.08
Median	3.0	2.5	2.3	2.0	2.0	2.3
Girls						
None	3	8	10	12	8	8
Less than 1 portion	6	4	3	8	3	5
1 portion or more but less than 2	17	17	17	16	27	19
2 portions or more but less than 3	22	28	19	18	22	22
3 portions or more but less than 4	26	15	22	19	17	20
4 portions or more but less than 5	11	14	9	8	13	11
5 portions or more	15	13	20	18	11	15
Mean	3.1	2.8	3.1	2.9	2.6	2.9
Standard error of the mean	0.16	0.15	0.22	0.25	0.19	0.09
Median	3.0	2.5	3.0	2.7	2.3	2.7
All children						
None	4	7	11	12	12	9
Less than 1 portion	4	5	4	6	2	4
1 portion or more but less than 2	19	18	19	25	27	21
2 portions or more but less than 3	21	27	21	19	22	22
3 portions or more but less than 4	24	16	20	16	15	19
4 portions or more but less than 5	14	14	10	7	11	11
5 portions or more	13	12	15	15	11	13
Mean	3.0	2.7	2.9	2.7	2.5	2.8
Standard error of the mean	0.11	0.10	0.16	0.17	0.16	0.07
Median	3.0	2.5	2.7	2.0	2.0	2.5

Continued…

Table 4.4 - *Continued*

Aged 2-15 *2016*

Portions per day	**Age**					**Total**
	2-4	5-7	8-10	11-12	13-15	
Bases (weighted):						
Boys	*148*	*153*	*155*	*100*	*133*	*689*
Girls	*154*	*159*	*148*	*100*	*115*	*674*
All children	*302*	*312*	*303*	*199*	*247*	*1363*
Bases (unweighted):						
Boys	*140*	*162*	*153*	*90*	*120*	*665*
Girls	*169*	*165*	*139*	*95*	*112*	*680*
All children	*309*	*327*	*292*	*185*	*232*	*1345*

Table 4.5 Summary of adult eating habits, 2008, 2010, 2012, 2014 and 2016

Aged 16 and over *2008, 2010, 2012, 2014, 2016*

Food type and frequency	2008	2010	2012	2014	2016
	%	%	%	%	%
Men					
Eats oily fish once a week or more	23	24	25	23	32
Eats white fish once a week or more	50	51	52	48	51
Eats tuna fish once a week or more	27	29	29	25	25
Eats red meat[a] 2+ times a week	64	63	59	61	64
Eats meat products[b] 2+ times a week	39	34	36	37	42
Drinks skimmed / semi-skimmed milk	70	73	71	71	70
Sweets or chocolates once a day or more	28	26	28	27	31
Biscuits once a day or more	36	35	33	35	30
Cakes 2+ times a week	36	36	36	36	31
Ice-cream once a week or more	29	24	28	33	30
Non-diet soft drinks once a day or more	26	29	28	30	23
Crisps once a day or more	19	17	18	23	18
Eats chips 2+ times a week	36	35	36	37	37
Eats potatoes, pasta, rice 5+ times a week	55	53	52	51	49
Eats at least 2-3 slices of high fibre bread a day	42	41	43	43	42
Eats high fibre / low sugar cereal at least 5-6 times a week	29	24	31	30	29
Women					
Eats oily fish once a week or more	26	24	26	27	32
Eats white fish once a week or more	52	49	50	48	48
Eats tuna fish once a week or more	33	32	32	30	31
Eats red meat[a] 2+ times a week	59	53	53	51	51
Eats meat products[b] 2+ times a week	18	17	21	20	23
Drinks skimmed / semi-skimmed milk	77	77	77	77	73
Sweets or chocolates once a day or more	28	24	29	26	26
Biscuits once a day or more	33	28	32	27	25
Cakes 2+ times a week	33	36	33	32	32
Ice-cream once a week or more	28	24	25	26	24
Non-diet soft drinks once a day or more	21	23	22	24	17
Crisps once a day or more	16	14	16	19	15
Eats chips 2+ times a week	26	24	26	25	26
Eats potatoes, pasta, rice 5+ times a week	54	53	51	52	51
Eats at least 2-3 slices of high fibre bread a day	42	43	40	37	34
Eats high fibre / low sugar cereal at least 5-6 times a week	31	28	33	30	26

Continued…

Table 4.5 - *Continued*

Aged 16 and over *2008, 2010, 2012, 2014, 2016*

Food type and frequency	2008	2010	2012	2014	2016
	%	%	%	%	%
All adults					
Eats oily fish once a week or more	25	24	26	25	32
Eats white fish once a week or more	51	50	51	48	49
Eats tuna fish once a week or more	30	30	30	28	28
Eats red meat[a] 2+ times a week	61	58	56	56	57
Eats meat products[b] 2+ times a week	28	25	28	28	32
Drinks skimmed / semi-skimmed milk	74	75	74	74	72
Sweets or chocolates once a day or more	28	25	29	27	28
Biscuits once a day or more	34	31	32	31	28
Cakes 2+ times a week	34	36	35	34	32
Ice-cream once a week or more	28	24	26	29	27
Non-diet soft drinks once a day or more	23	26	25	27	20
Crisps once a day or more	17	15	17	21	17
Eats chips 2+ times a week	31	29	31	31	31
Eats potatoes, pasta, rice 5+ times a week	55	53	51	51	50
Eats at least 2-3 slices of high fibre bread a day	42	42	41	40	38
Eats high fibre / low sugar cereal at least 5-6 times a week	30	26	32	30	28
Bases (weighted):					
Men	*1086*	*1142*	*1252*	*999*	*1057*
Women	*1188*	*1242*	*1359*	*1081*	*1143*
All adults	*2274*	*2384*	*2611*	*2080*	*2200*
Bases (unweighted):					
Men	*986*	*1013*	*1151*	*925*	*985*
Women	*1286*	*1371*	*1459*	*1155*	*1216*
All adults	*2272*	*2384*	*2610*	*2080*	*2201*

a for example beef, lamb or pork

b for example sausages, meat pies, bridies, corned beef or burgers

Table 4.6 Summary of child eating habits, 2015/2016 combined

Aged 2-15 *2015/2016 combined*

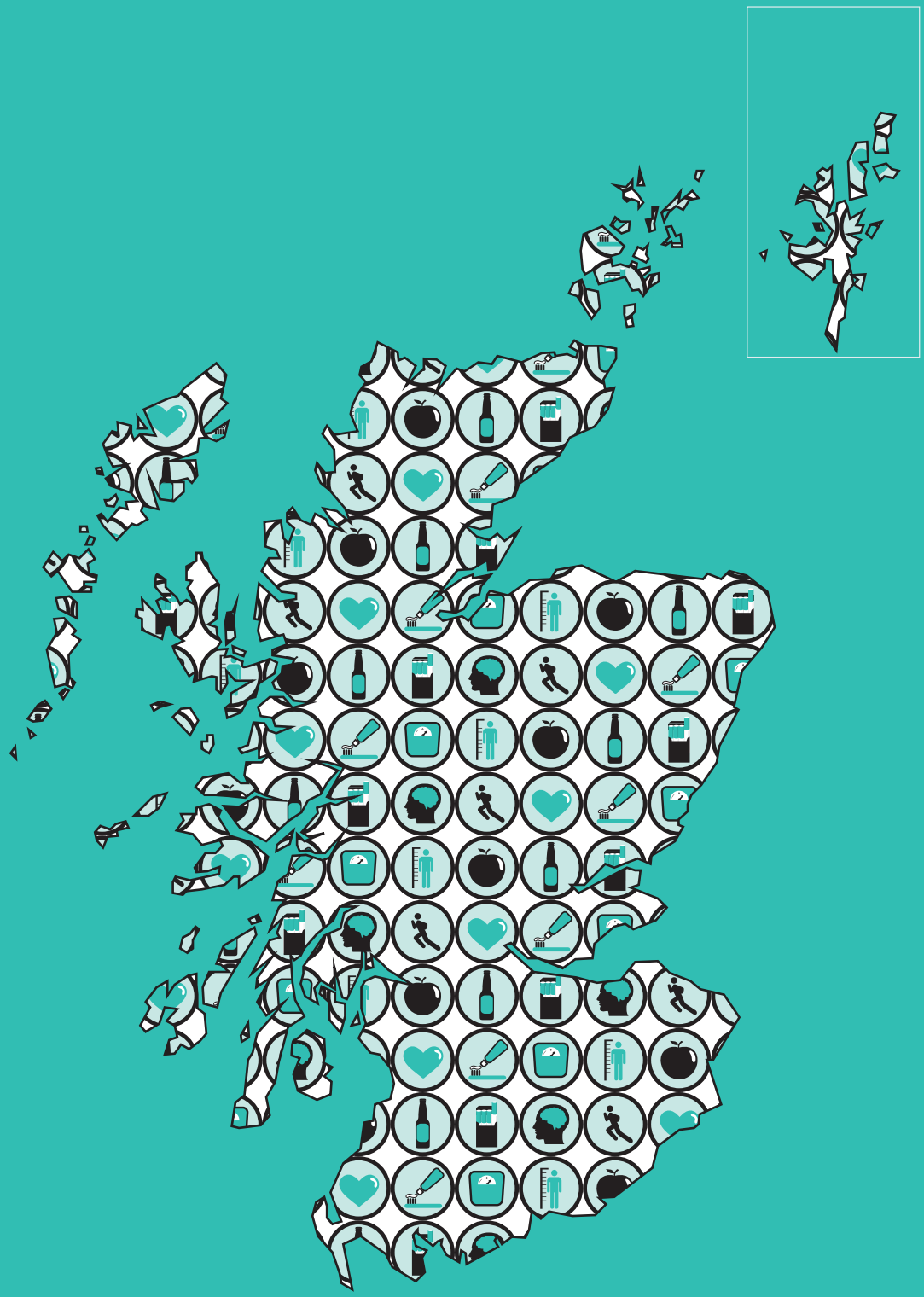
Food type and frequency	2015/2016
	%
Boys	
Eats oily fish once a week or more	16
Eats white fish once a week or more	52
Eats tuna fish once a week or more	25
Eats red meat[a] 2+ times a week	56
Eats meat products[b] 2+ times a week	47
Drinks skimmed / semi-skimmed milk	55
Sweets or chocolates once a day or more	51
Biscuits once a day or more	34
Cakes 2+ times a week	33
Ice-cream once a week or more	47
Non-diet soft drinks once a day or more	35
Crisps once a day or more	34
Eats chips 2+ times a week	43
Eats potatoes, pasta, rice 5+ times a week	49
Eats at least 2-3 slices of high fibre bread a day	35
Eats high fibre / low sugar cereal at least 5-6 times a week	30
Girls	
Eats oily fish once a week or more	17
Eats white fish once a week or more	51
Eats tuna fish once a week or more	29
Eats red meat[a] 2+ times a week	58
Eats meat products[b] 2+ times a week	36
Drinks skimmed / semi-skimmed milk	60
Sweets or chocolates once a day or more	51
Biscuits once a day or more	30
Cakes 2+ times a week	33
Ice-cream once a week or more	49
Non-diet soft drinks once a day or more	34
Crisps once a day or more	32
Eats chips 2+ times a week	42
Eats potatoes, pasta, rice 5+ times a week	50
Eats at least 2-3 slices of high fibre bread a day	29
Eats high fibre / low sugar cereal at least 5-6 times a week	27

Continued…

Table 4.6 - *Continued*

Aged 2-15	*2015/2016 combined*
Food type and frequency	2015/2016
	%
All children	
Eats oily fish once a week or more	16
Eats white fish once a week or more	51
Eats tuna fish once a week or more	27
Eats red meat[a] 2+ times a week	57
Eats meat products[b] 2+ times a week	42
Drinks skimmed / semi-skimmed milk	58
Sweets or chocolates once a day or more	51
Biscuits once a day or more	32
Cakes 2+ times a week	33
Ice-cream once a week or more	48
Non-diet soft drinks once a day or more	35
Crisps once a day or more	33
Eats chips 2+ times a week	42
Eats potatoes, pasta, rice 5+ times a week	50
Eats at least 2-3 slices of high fibre bread a day	32
Eats high fibre / low sugar cereal at least 5-6 times a week	29
Bases (weighted):	
Boys	*1319*
Girls	*1312*
All children	*2631*
Bases (unweighted):	
Boys	*1300*
Girls	*1292*
All children	*2592*

a for example beef, lamb or pork
b for example sausages, meat pies, bridies, corned beef or burgers



Chapter 5

Obesity

SUMMARY

Two thirds
(65%) of adults were overweight, including

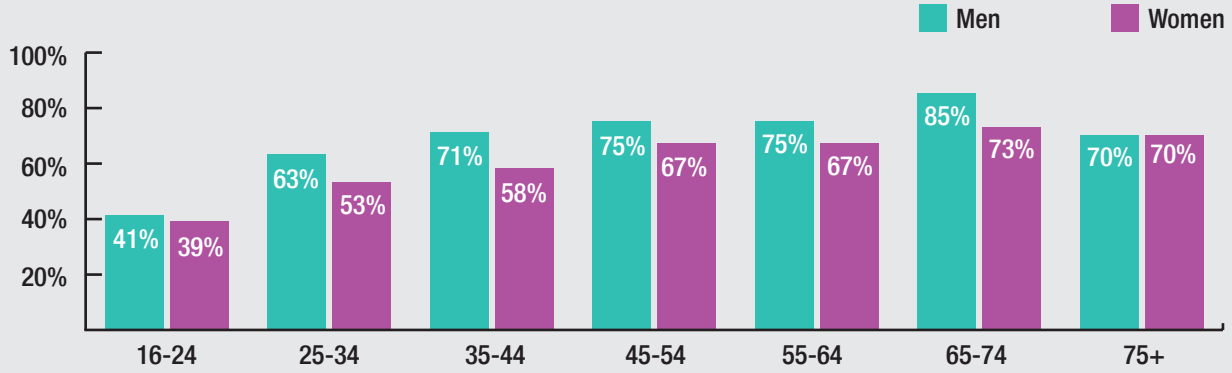
29%
who were obese, in 2016

These figures are largely unchanged since 2008.

- Men were significantly more likely than women to be overweight including obese in 2016 (68% compared with 61%) as in all survey years since 2003.
- Obesity prevalence was highest among those aged 65-74 (36%) and lowest among those aged 16-24 (14%).

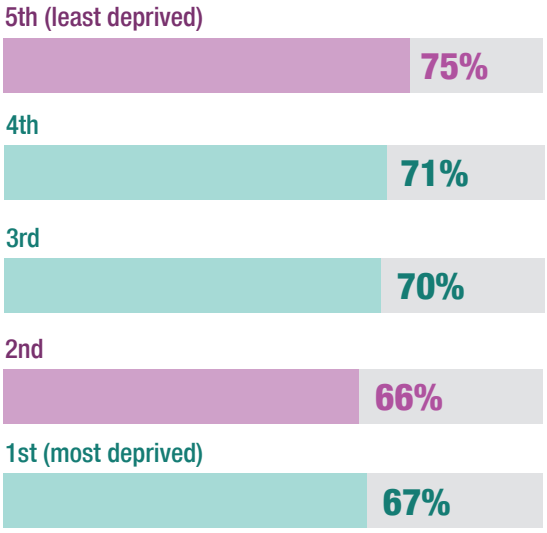
The mean BMI has increased from **27.1 to 27.7** since 2003

Levels of overweight (including obesity) tend to increase with age



- 70% of children (aged 2-15) were of healthy weight in 2016, which is in line with figures since 1998 (between 65% and 72%).
- At 29%, the proportion of children at risk of being overweight (including obesity) in 2016 was similar to previous years.
- There has been a significant decline in the prevalence of the risk of obesity in children between 2014 (17%) and 2016 (14%), representing a return to the lowest recorded rate of 14% in 1998.

The proportion of children of a healthy weight was lowest in the two most deprived quintiles.



70% of children (aged 2-15) were of healthy weight

5 OBESITY

Diana Bardsley

5.1 INTRODUCTION

Overweight and obesity have been defined as abnormal or excessive fat accumulation that may impair health[1,2]. Obesity is associated with an increased risk of a number of common causes of disease and, at high levels of obesity (BMI of 35 or above), death[3]. The impact of overweight and obesity upon quality of life and health is felt across the life course. During childhood, those who are overweight or obese have an increased risk of conditions such as hypertension, type 2 diabetes and asthma[4,5]. If their weight continues to be unhealthy into adulthood, children are at an increased risk of numerous conditions associated with adult obesity, such as diabetes, cardiovascular disease, osteoarthritis and some cancers[6,7,8]. Prevalence of Type 2 diabetes is steadily increasing[9]. There is also evidence suggesting a link between overweight and obesity in midlife and dementia in late life[10,11,12].

Scotland has one of the worst obesity records among OECD countries. As a chronic health condition obesity affects individuals across the lifespan and transitions from childhood to adulthood. Various studies have attempted to estimate the costs to the NHS in Scotland of overweight and obesity combined, with suggested figures ranging between £363 and £600 million (the majority of these costs are incurred as a result of associated conditions such as cardiovascular disease and Type 2 diabetes, rather than direct costs of treating or managing overweight and obesity)[13]. The latest estimate of the total (direct and indirect) costs of overweight and obesity to Scottish society, including labour market related costs such as lost productivity, have been put at £0.9-4.6 billion[13].

The pervasiveness of the obesity problem, and the health and economic consequences of obesity mean that tackling it remains a key priority and a major challenge for government and public health professionals.

5.1.1 Policy background

A number of government policies and initiatives aimed at addressing the issue of obesity are in place in Scotland. In the **Prevention of Obesity Route Map**, the Scottish Government and COSLA outlined their long-term commitment to tackle overweight and obesity and achieve a healthier Scotland[14]. The long-term goals of the route map are to have the majority of Scotland's adult population in normal weight throughout life, to have reduced levels of Type 2 diabetes, and to have fewer overweight or obese children in Scotland[15]. The commitment to the last of these goals is reinforced by the inclusion of the National Indicator to 'increase the proportion of healthy weight children' in the **National Performance Framework (NPF)**[16].

The Scottish Health Survey (SHeS) is used to monitor progress towards the NPF indicator on healthy weight children and several of the **Obesity Route Map** indicators[9]. Scotland's children and young people's mental

health indicators set also includes an indicator on child obesity prevalence[17].

Eat Better Feel Better is a campaign aimed at promoting healthier eating as a simple and affordable choice for everyone in Scotland. Connecting people with local cooking classes, food co-ops and community groups that can offer support on nutrition and food, the campaign aims to have a long-lasting effect on families and communities. It is supported by supermarkets and the convenience sector throughout Scotland and aims to promote the healthier eating message to as many shoppers as possible.

Regular physical activity helps people maintain a healthy weight. One of the themes of **Legacy 2014** programmes is to use the opportunities presented by the 2014 Commonwealth Games to help people be more physically active[18]. The **Physical Activity Implementation Plan** is one of the many legacy programmes developed under the 'active' theme to meet this desired outcome[19]. The 10 year plan, launched in 2014, links directly to the Scottish Government's legacy ambitions for the Commonwealth Games.

In 2016, the WHO Commission on Ending Childhood Obesity set out recommendations for governments aiming to reverse the rising trend of children aged under 5 years becoming overweight and obese[20]. In line with a commitment in the **Fairer Scotland Action Plan**[21], the Scottish Government will be consulting with stakeholders later this year in order to develop a new **Diet and Obesity Strategy**. The strategy will include a range of actions to deliver a new approach to diet and healthy weight management. The recently published **Programme for Government 2017-18** also sets out the Scottish Government's intention to progress measures limiting the marketing of products high in fat, sugar and salt[22].

5.1.2 Reporting on obesity in the Scottish Health Survey (SHeS)

The anthropometric measures presented in this chapter focus on measurements relevant to adult and child obesity. Height, weight and waist measurements have been collected during the survey interview every year since its inception in 1995. SHeS is one of a small number of surveys that collects height, weight and waist measures rather than using self-reported measures, which are known to be less accurate [23,24]. Waist measurements are not reported for 2016. Height and weight are used to calculate Body Mass Index (BMI), the primary measure of obesity used in the SHeS series. Adults' and children's trends in BMI are examined in this chapter, as are 2016 levels of obesity by consumption of foods high in sugar and/or fat and by area deprivation.

Area deprivation data for obesity are presented using Scottish Index of Multiple Deprivation (SIMD) quintiles. Where appropriate, to ensure that comparisons are not confounded by different age profiles within categories, data have been age-standardised. Readers should refer to the Glossary at the end of this Volume for a detailed description of SIMD, BMI and age-standardisation.

Supplementary tables are also available on the Scottish Government SHeS website[25].

5.1.3 Comparability with other UK statistics

Adult obesity is defined consistently in the Scottish Health Survey and the other health surveys within the UK using BMI classifications. Height and weight measurements are self-reported in the National Survey for Wales and are therefore not directly comparable with equivalent statistics in Scotland, England and Northern Ireland, where direct measurements are taken. Sampling methodologies differ between the surveys. Of the four UK health surveys, the Scottish Health Survey and Health Survey for England are the most closely aligned.

5.2 METHODS AND DEFINITIONS

5.2.1 Methods

Height

Height was measured using a portable stadiometer with a sliding head plate, base plate and four connecting rods marked with a metric measuring scale. Participants were asked to remove shoes. One measurement was taken, with the participant stretching to the maximum height and the head positioned in the Frankfort plane[26]. If the reading was between two millimetres it was recorded to the nearest even millimetre. No measurement was taken from participants who were pregnant, aged under 2, or unsteady on their feet.

Weight

Weight was measured using either Seca or Tanita electronic scales, both of which use a digital display. Participants were asked to remove shoes and any bulky clothing. A single measurement was recorded to the nearest 100g. A weight measurement was not collected from participants who were pregnant, aged under 2, or unsteady on their feet. Due to the scale limits, when using a Tanita scale those who weighed more than 130 kg were asked for an estimate of their weight, with estimates required for those weighing more than 200 kg if Seca scales were being used. These estimated weights were included in the analysis presented in this chapter.

In the analysis of height and weight, data from those who were considered by the interviewer to have unreliable measurements, for example those who had excessive clothing on, were excluded.

5.2.2 Definitions

Body Mass Index (BMI)

Body Mass Index (BMI) is a widely accepted measure that allows for differences in weight due to height. It is defined as weight (kg)/square of height (m^2). This has been used as a measure of obesity in SHeS since

its inception in 1995. BMI was calculated from valid measures collected by the interviewer.

Adult BMI classification

Based on their BMI, adult participants were classified into the following groups based on the World Health Organisation (WHO) classification[27]:

BMI (kg/m^2)	Description
Less than 18.5	Underweight
18.5 to less than 25	Normal
25 to less than 30	Overweight, excluding obese
30 to less than 40	Obese, excluding morbidly obese
40+	Morbidly obese

In this chapter, both mean BMI and prevalence for the five categories outlined in the table above are presented for adults. Although obesity has the greatest ill-health and mortality consequences, overweight is also a major public health concern, not least because overweight people are at high risk of becoming obese. Being underweight can also have negative health consequences.

Child BMI classification

BMI is defined for children in the same way as it is for adults: weight (kg)/square of height (m^2). The International Obesity Task Force concluded that BMI is a reasonable measure of adiposity in children[28] and it is the key measure of overweight and obesity for children used in the SHeS series.

Despite the relatively wide acceptance of the use of BMI as an adiposity indicator, the establishment of an agreed specific obesity and overweight classification system for children and young people remains challenging. Constant changes in body composition during growth mean that the relationship between weight-for-height and adiposity during childhood and adolescence is age-dependent, and this relationship is further complicated by both ethnicity and gender[29].

The classification of children's BMI used in this chapter, set out below, has been derived from BMI percentiles of the UK 1990 reference curves[30,31] (referred to as the national BMI percentiles classification); these have been used in each SHeS to date. The national BMI percentiles classification has been shown to be reasonably sensitive (i.e. not classifying obese children as non-obese) and specific (i.e. not classifying non-obese children as obese)[32,33]. SIGN recommends that these reference curves and thresholds should be used for population surveillance in Scotland[7]. The 85th / 95th percentile cut-off points are commonly accepted thresholds used to analyse overweight and obesity in children. These thresholds have previously been used to describe childhood overweight and obesity prevalence trends in the UK[34,35,36,37].

Percentile cut-off	Description
At or below 2nd percentile	At risk of underweight
Above 2nd percentile and below 85th percentile	Healthy weight
At or above 85th percentile and below 95th percentile	At risk of overweight
At or above 95th percentile	At risk of obesity

SHeS uses a method developed by ISD Scotland to plot the exact ages of the children in the sample against the reference population data[38]. While children's exact age was used to calculate the BMI grouping prevalence rates (based on the interview date and the date of birth), results are presented using grouped ages based on age at last birthday.

As noted in the introduction to this chapter, one of the Scottish Government's national indicators relates to healthy weight in children, defined as neither underweight nor overweight or obese[39]. The presented data have been categorised to show the total proportions that are: healthy weight, at risk of overweight, at risk of obesity, and at risk of underweight.

5.3 ADULT OVERWEIGHT AND OBESITY PREVALENCE

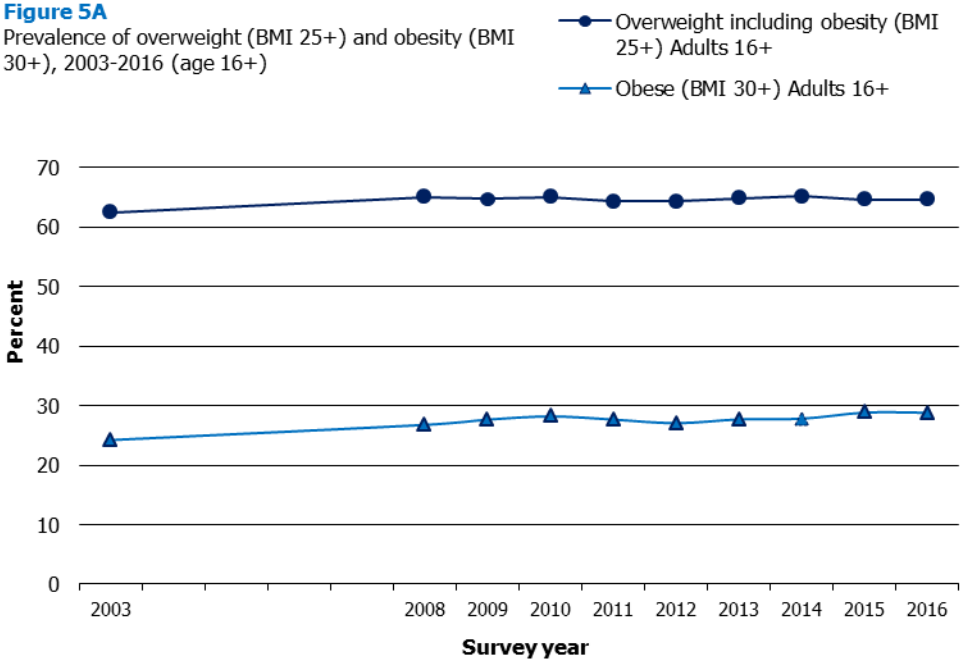
5.3.1 Trends in overweight including obesity prevalence since 2003

Prevalence of overweight including obesity among adults remained at 65% in 2016, unchanged since 2013. As seen in Figure 5A, the longer trend for overweight including obesity has shown little change since 2008, fluctuating between 64% and 65%.

There was a significant increase between 2003 and 2008, where prevalence rose from 62% to 65%; rates have since stabilised.

Figure 5A, Table 5.1

Figure 5A
Prevalence of overweight (BMI 25+) and obesity (BMI 30+), 2003-2016 (age 16+)

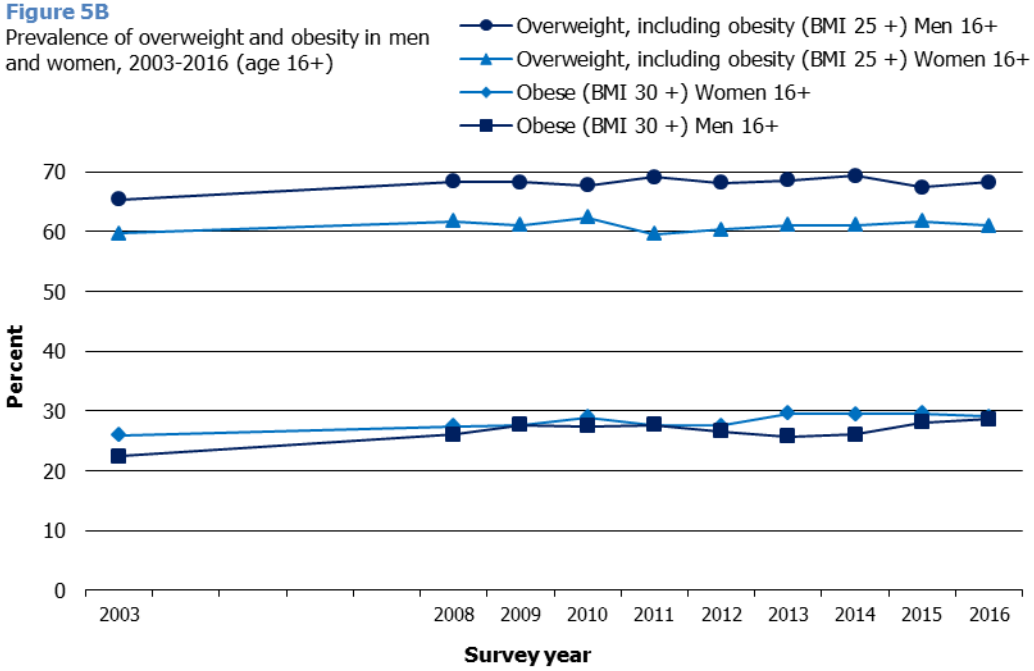


At 68% in 2016, the prevalence trend of overweight, including obesity among men in Scotland has followed the same pattern as all adults, see Figure 5B. Prevalence increased significantly from 65% in 2003 to 68% in 2008 and has since remained fairly unchanged, fluctuating between 67% and 69% during the period of 2008 to 2016.

Prevalence of overweight including obesity among women was 61% in 2016, continuing the stable trend which has remained between 60% and 62% during the 2003 to 2016 period.

As well as a slightly different pattern for men and women over time, Figure 5B shows men were significantly more likely than women to be overweight including obese across all years. **Figure 5B, Table 5.1**

Figure 5B
Prevalence of overweight and obesity in men and women, 2003-2016 (age 16+)



5.3.2 Trends in obesity prevalence since 2003

As shown in Figures 5A, levels of obesity, including morbid obesity, in adults increased from 24% to 27% between 2003 and 2008 and has since remained fairly static, fluctuating between 27% and 29% (29% in 2016). A similar pattern was observed among both men and women.

In 2016, prevalence of obesity in women was the same as that in men (29%). As shown in Figure 5B, there has been little difference between men and women in prevalence of obesity, including morbid obesity, since 2003. **Figure 5A, Figure 5B, Table 5.1**

5.3.3 Trends in mean adult BMI since 2003

Adult mean BMI in 2016 was the highest since the start of the time series in 2003 (27.7 kg/m² compared with 27.1 kg/m²). There has been a general upward trend over these years and adult mean BMI has been in the 'overweight' category in all years since 2003.

In 2016, mean BMI for both men and women was the same (27.7 kg/m²). In line with trends seen in all adults, mean BMI in men and women has been steadily increasing most years since 2003, though the increase has been more significant amongst men (in 2003, mean BMI was 27.0 kg/m² for men and 27.2 kg/m² for women). **Table 5.1**

5.3.4 Adult BMI in 2016, by age and sex

As shown in Figures 5C and 5D, there was a clear association between age and BMI in 2016.

In 2016, overweight including obesity (BMI of 25 and over), prevalence for all adults was highest amongst those aged 65-74 (78%) and lowest

amongst those aged 16-24 (40%). Overweight including obesity increased steadily with age until the 75 and over age group, where the percentage dropped significantly (from 78% of those aged 65 to 74, to 70% of those aged 75 and over).

Obesity (BMI of 30 and over) was also lowest amongst adults aged 16-24 (14%) and highest amongst those aged 65-74 (36%) with a significant drop amongst those aged 75 and over (27%).

The largest increase in obesity between contiguous age groups happened between the youngest age group (16-24) and those aged 25-34, where prevalence doubled from 14% to 28%.

Mean BMI was highest amongst adults aged 65-74, at 29.0 kg/m² (overweight), and lowest amongst adults aged between 16 and 24, at 24.8 kg/m² (healthy weight).

Prevalence of overweight including obesity (BMI of 25 and over) in men increased with age (41% of men aged 16-24, compared with 85% of men aged 65-74), and then decreased at ages 75 and over (70%). A similar pattern was evident for prevalence of obesity (BMI of 30 and over) in men which also saw a steady increase with age (10% of men aged 16-24, compared with 41% of men aged 65-74), and a significant decrease at ages 75 and over (22%).

With women, prevalence of overweight including obesity (BMI of 25 and over) increased with age (39% of women aged 16-24, compared with 73% of women aged 65-74), with a small decrease among those aged 75 and over (70%). There was no consistent relationship between age and obesity among women, with prevalence fluctuating between 27% and 34% between the 25-34 and 75 and over age groups (see Figure 5D). However, women were significantly more likely than men to be obese in both the youngest age group (18% of women aged 16-24, compared with 10% of men) and the oldest age group (31% of women aged 75 and over, compared with 22% of men).

For both men and women, there was a general finding of BMI increasing with age, from lowest in those aged 16-24 (24.4 kg/m² in men and 25.1 kg/m² in women) to highest in those aged 65-74 (29.7 kg/m² in men and 28.4 kg/m² in women), before decreasing significantly in those aged 75 and over. **Figure 5C, Figure 5D, Table 5.2**

Figure 5C
Prevalence of overweight (including obesity) and obesity, by age, 2016 (Men)

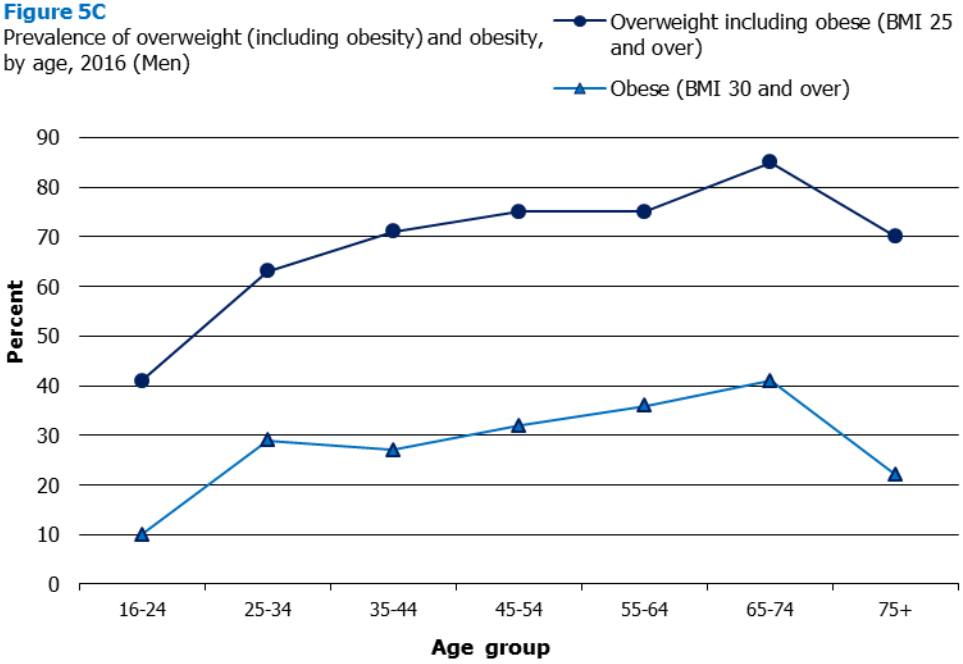
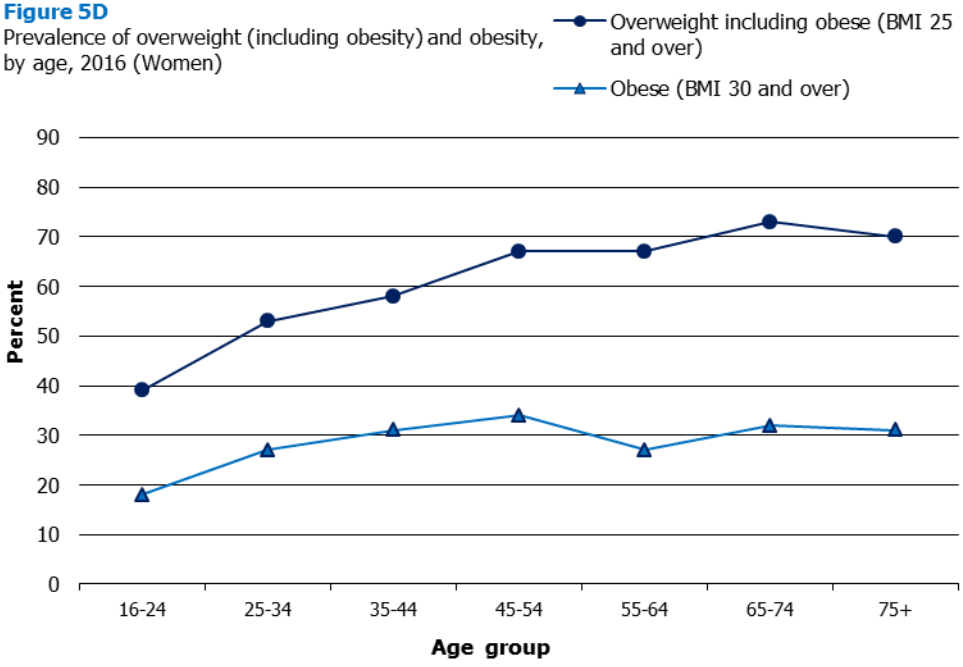


Figure 5D
Prevalence of overweight (including obesity) and obesity, by age, 2016 (Women)



5.3.5 Adult BMI in 2016, by area deprivation

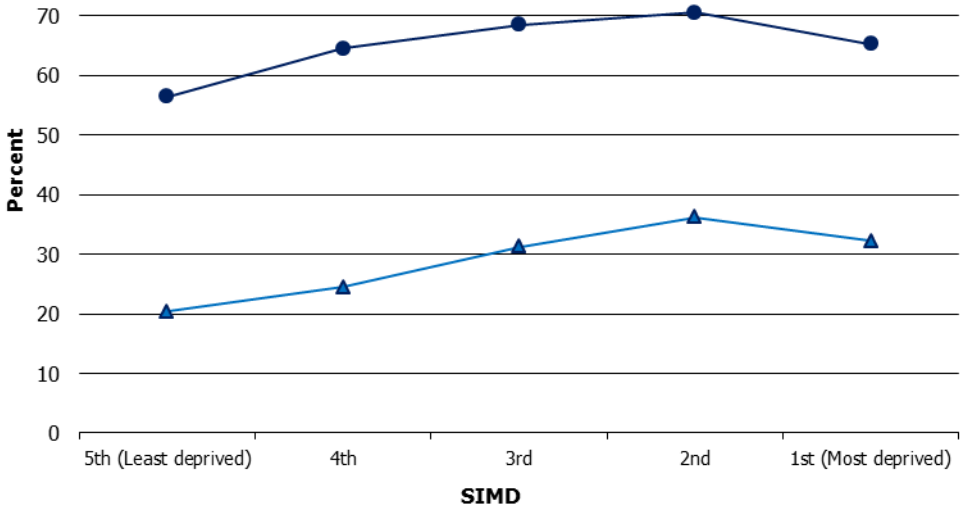
As shown in Figure 5E, overweight, including obesity, for all adults increased significantly with deprivation; from 56% of adults in the least deprived quintile, to 71% in the second most deprived quintile before decreasing to 65% in the most deprived quintile.

Obesity, including morbid obesity, also increased with deprivation. In the least deprived quintile, one fifth (20%) of adults were obese, compared with almost 36% in the second most deprived quintile. As

with overweight, obesity prevalence then decreased again in the most deprived quintile (32%).

Mean BMI increased with deprivation, peaking at 28.5 kg/m² in the second most deprived quintile, compared with 26.5 kg/m² in the least deprived quintile. **Figure 5E, Table 5.3**

Figure 5E
Prevalence of overweight (BMI 25+) and obesity (BMI 30+), 2003-2016 (age 16+) by SIMD (age standardised)



A similar pattern of association between BMI and deprivation was found for both men and women (as shown in Figures 5F and 5G); the association being more pronounced among women.

Both men and women in the least deprived areas in Scotland had the lowest prevalence of overweight including obesity (62% of men and 50% of women). For women, prevalence increased with deprivation, peaking in the third and second most deprived quintiles (67%). For men, prevalence was highest in the second most deprived quintile, at almost three quarters (74%).

Prevalence of obesity, including morbid obesity, in men increased significantly as area deprivation increased, peaking at 40% of men in the second most deprived quintile (compared with 20% in the least deprived quintile), before significantly decreasing in the most deprived quintile, to 29%.

Amongst women, prevalence of obesity, including morbid obesity, increased with deprivation (20% in the least deprived quintile compared with 35% in the most deprived quintile). Prevalence of obesity amongst men in the most deprived quintile was 6 percentage points lower among women in that quintile. **Figure 5F, Figure 5G, Table 5.3**

Figure 5F
Prevalence of overweight, including obesity (BMI 25+), by SIMD and sex (age standardised), 2016

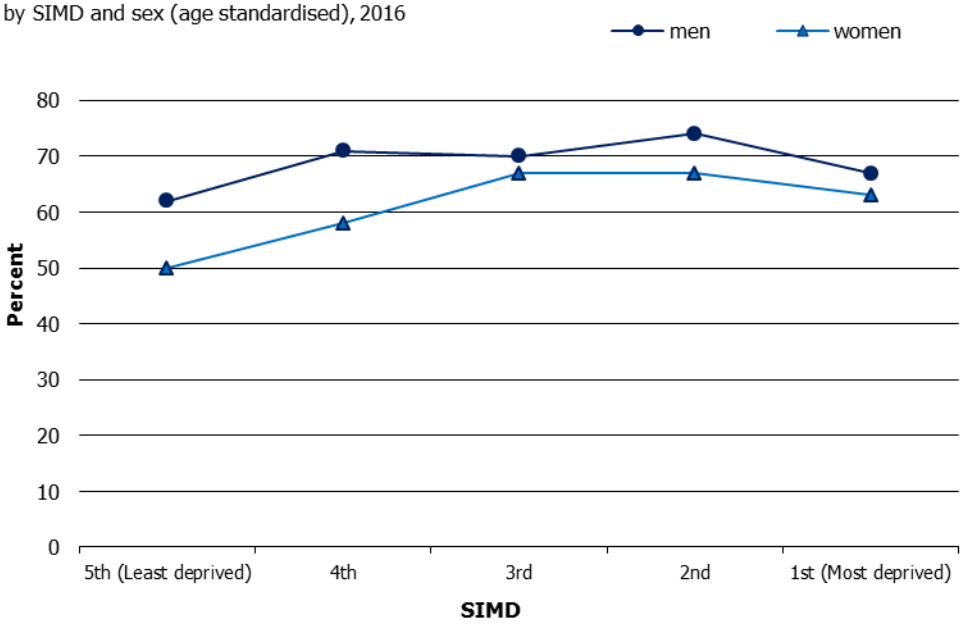
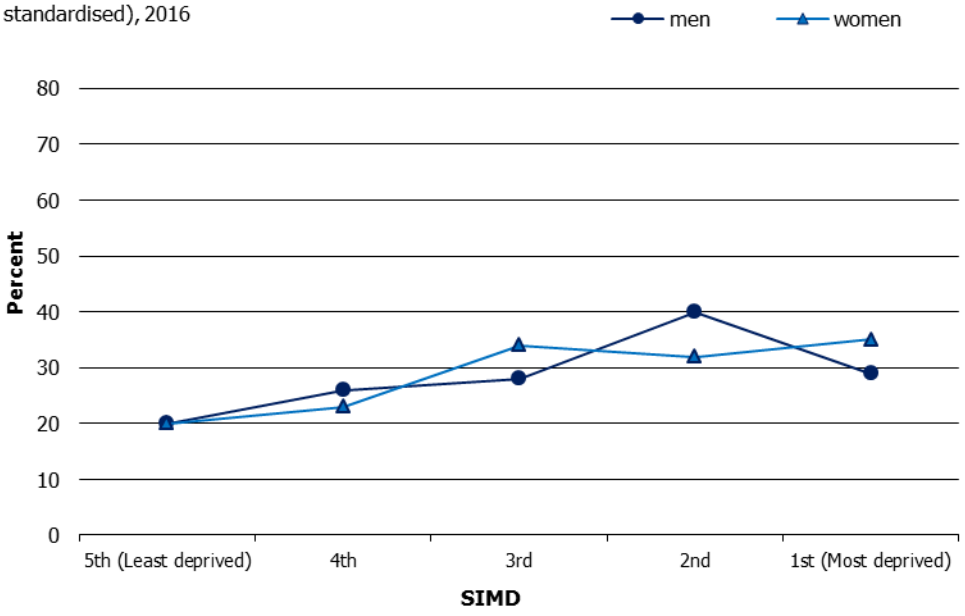


Figure 5G
Prevalence of obesity (BMI 30+), by SIMD and sex (age-standardised), 2016



5.3.6 Adult BMI by consumption of foods and drinks high in sugar and/or fat for 2014-2016 combined

Although overall consumption of foods and drinks high in sugar and/or fat among adults appeared to be higher amongst those who were underweight or a normal weight and those who were overweight (75% and 74% respectively) than those who were obese (70%), this difference was not statistically significant. However, some patterns of association were found between BMI and specific types of food that are high in fat and/or sugar and how often they were consumed.

When considering just consumption of sweets or chocolates once a day or more, analysis showed this was significantly higher amongst those who were underweight or normal weight (31%) than those who were overweight (27%) or obese (25%).

Analysis of adult BMI by consumption of cakes twice a week or more showed that this was highest amongst those with an overweight BMI (37%), followed by adults who were underweight or a normal weight (33%). Adults who were obese were the least likely to consume cakes twice a week or more (29%).

When exploring the relationship between BMI and consumption of non-diet soft drinks, analysis showed that the pattern differed for men and women. Consumption of non-diet soft drinks once a day or more was, for men, highest amongst those who were underweight or a normal weight (32%, compared with 24% of obese men, and 23% of overweight men). For women, however, consumption was highest amongst those who were obese (24% compared with 20% of underweight or normal weight women and 18% of obese women).

There was no significant association between BMI and consumption of biscuits once a day or more, or eating ice cream once a week or more.

For further analysis on the consumption of foods and drinks high in sugar and/or fat by sex, please refer to Chapter 4. **Table 5.4**

5.4 CHILD OVERWEIGHT AND OBESITY PREVALENCE

5.4.1 Trends in child healthy weight, overweight and obesity prevalence since 1998

A child is described as being of a 'healthy weight' if their BMI is above the 2nd percentile and below the 85th percentile of the UK 1990 reference curves.

In 2016 the prevalence of children aged between 2 and 15 in the healthy weight range was 70%. Trends in children who are a healthy weight have remained fairly stable since 1998, with the lowest prevalence occurring in 2011 (65%) and the highest in 2015 (72%).

Following the trend for all children, healthy weight prevalence amongst both boys and girls has remained relatively steady since 1998.

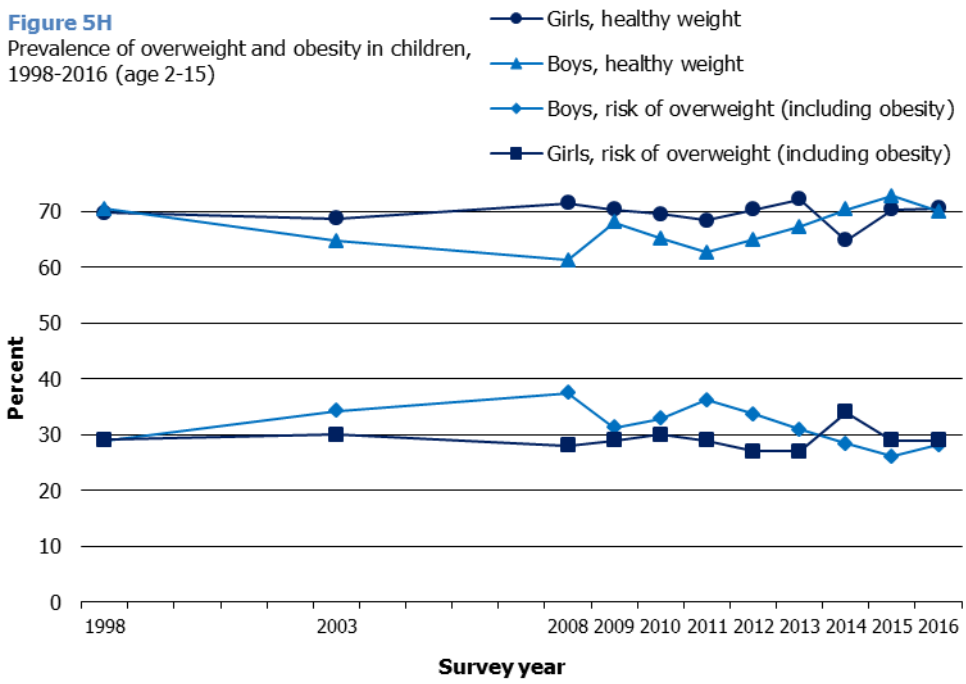
The prevalence of healthy weight in boys had been on the rise since 2011, falling only in 2016 to 70% (down from 73% in 2015).

Prevalence of those at risk of overweight, including obesity in children has remained relatively stable between 1998 (29%) and 2016 (29%), fluctuating between 28% and 33% in the intervening years.

Although the prevalence of children at risk of obesity is the same in 2016 (14%) as in 1998, prevalence had been stable from 2003 to 2014 (fluctuating between 16% and 17%) but has been steadily decreasing since 2014, going down from 17% in 2014, to 15% in 2015, and dropping further to 14% in 2016. This is an indication of a downward trend; however data for subsequent years will be required to confirm this.

In 2016, 28% of boys and 29% of girls aged between 2 and 16 were at risk of overweight, including obesity. As shown in Figure 5H, there is no clear pattern in prevalence of risk of overweight for either boys or girls, with fluctuation in previous survey years (between 38% and 26% for boys and 34% and 27% for girls). **Figure 5H, Table 5.5**

Figure 5H
Prevalence of overweight and obesity in children, 1998-2016 (age 2-15)



There has been little difference in rates of risk of obesity between boys and girls between 1998 and 2016. However, for boys there has been a decline in prevalence of risk of obesity since 2012 (20% in 2012 compared with 14% in 2016). **Table 5.5**

5.4.2 Child BMI categories by area deprivation for 2015/2016 combined

In 2015/2016, prevalence of children in the healthy weight range was significantly associated with area deprivation; however the pattern did not follow a clear gradient. The highest healthy weight prevalence was found among the least deprived quintile (75%), whilst it was lowest in the second most deprived quintile (66%).

A clear gradient was evident for boys; as shown in Figure 5I, boys in the least deprived quintile were the most likely to be in the healthy weight range (78%), compared with 63% of boys in the most deprived quintile.

The pattern was different for girls, as shown in Figure 5I. Girls in the two least deprived quintiles had the highest prevalence in the healthy weight range (72%) and the lowest prevalence was the second most deprived (65%) however this difference was not statistically significant.

As shown in Figure 5J, prevalence of risk of overweight including obesity, was significantly associated with area deprivation; it was highest in the second most and most deprived quintiles (33% and 32% respectively) and lower in the less deprived quintiles (ranging between 25% and 26%).

For boys, prevalence of risk of overweight including obesity was lowest in the least deprived quintile (21%) and highest in the most deprived quintile (35%).

Following a different pattern, girls in the second most deprived quintile were at highest risk of overweight including obesity (34%) compared with the other four quintiles where prevalence ranged between 28% and 29%.

Prevalence of children at risk of obesity was not significantly associated with area deprivation. **Figure 5I, Figure 5J, Table 5.6**

Figure 5I
Prevalence of children within healthy weight range by SIMD and sex, 2015/2016 combined

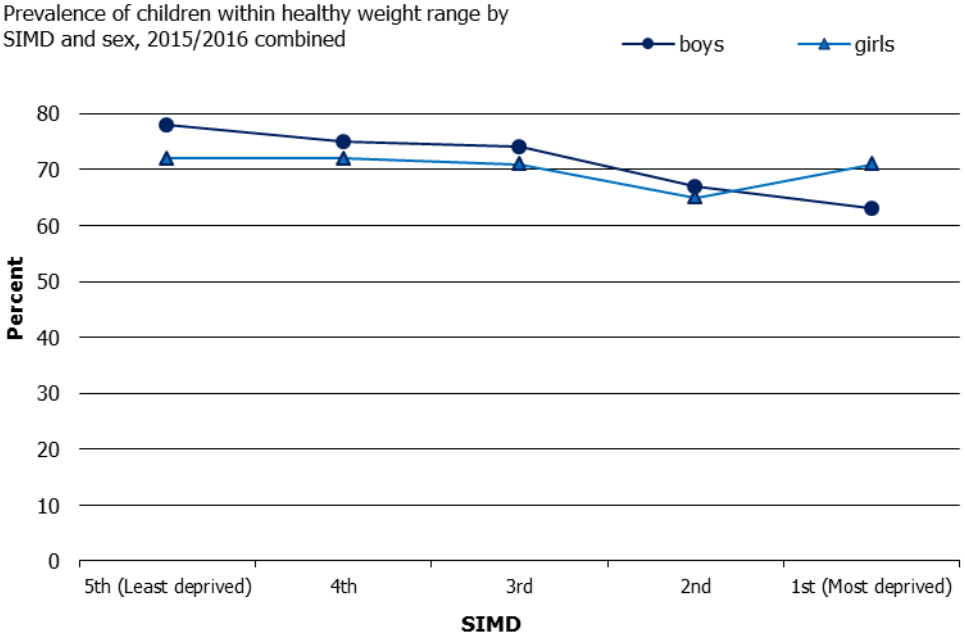
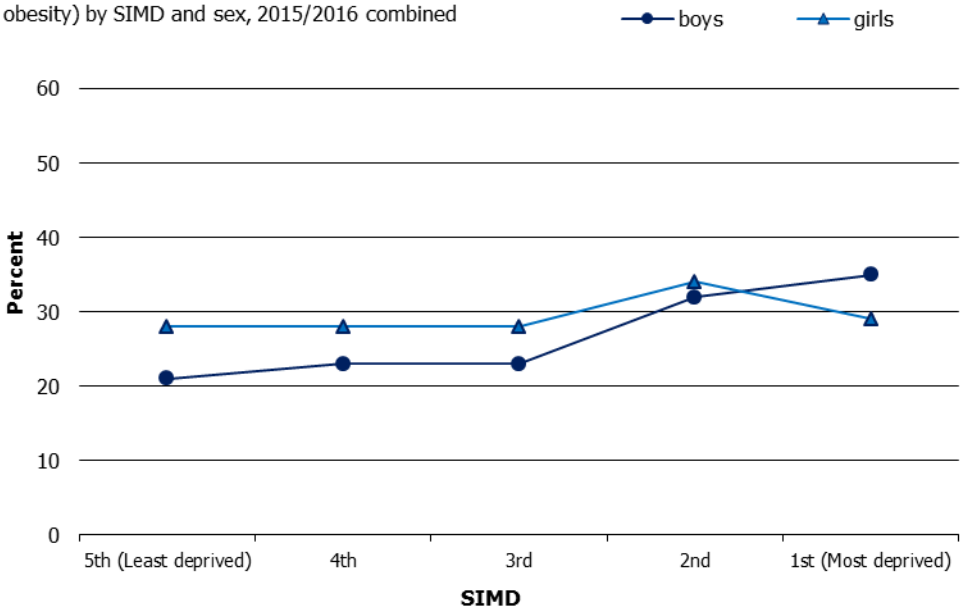


Figure 5J
Prevalence of children at risk of overweight (including obesity) by SIMD and sex, 2015/2016 combined



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[25] See: www.gov.scot/scottishhealthsurvey

[26] The Frankfort Plane is an imaginary line passing through the external ear canal and across the top of the lower bone of the eye socket, immediately under the eye. Participants' heads are positioned with the Frankfort Plane in a horizontal position when height is measured using a stadiometer as a means of ensuring that, as far as possible, the measurements taken are standardised.

[27] These cut-offs differ to those used in the previous surveys. In 1995 and 1998 the normal weight range was defined as 20-25 kg/m^2, in 2003 it was changed to 18.5-25 kg/m^2. From 2008 onwards the ranges are defined as set out below. This brings the definition in line with WHO recommendations. The impact of the change of definition is very marginal as very few people have a BMI measurement that is exactly 18.5, 25, 30 or 40 kg/m^2.

	2003	**2008 onwards**
Underweight	18.5 or under	Less than 18.5
Normal weight	Over 18.5 – 25	18.5 to less than 25
Overweight	Over 25 – 30	25 to less than 30
Obese	Over 30 – 40	30 to less than 40
Morbidly obese	Over 40	40+

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[38] This method has been developed by ISD Scotland, full details of the procedure are available on request from the Scottish Government Scottish Health Survey Team.

[39] See: www.gov.scot/About/Performance/scotPerforms/indicator/healthyweight

Table list

Table 5.1 Mean adult BMI, prevalence of overweight and obesity, 2003 to 2016

Aged 16 and over with valid height and weight measurements *2003 - 2016*

BMI (kg/m^2)	2003	2008	2009	2010	2011	2012	2013	2014	2015	2016
	%	%	%	%	%	%	%	%	%	%
Men										
25 and over[a]	65	68	68	68	69	68	69	69	67	68
30 and over[b]	22	26	28	27	28	27	26	26	28	29
40 and over[c]	2	1	2	2	2	2	2	2	2	3
Mean	27.0	27.3	27.6	27.5	27.6	27.4	27.5	27.5	27.7	27.7
SE of the mean	0.10	0.12	0.12	0.13	0.12	0.14	0.14	0.17	0.15	0.17
Women										
25 and over[a]	60	62	61	62	60	60	61	61	62	61
30 and over[b]	26	27	28	29	28	28	30	29	30	29
40 and over[c]	3	3	4	3	4	3	4	4	3	4
Mean	27.2	27.4	27.4	27.6	27.5	27.4	27.6	27.6	27.5	27.7
SE of the mean	0.12	0.13	0.13	0.12	0.12	0.14	0.17	0.16	0.15	0.18
All adults										
25 and over[a]	62	65	65	65	64	64	65	65	65	65
30 and over[b]	24	27	28	28	28	27	28	28	29	29
40 and over[c]	3	2	3	2	3	3	3	3	3	4
Mean	27.1	27.4	27.5	27.5	27.5	27.4	27.5	27.6	27.6	27.7
SE of the mean	0.09	0.10	0.09	0.10	0.10	0.11	0.13	0.12	0.12	0.13
Bases (weighted):										
Men	*3217*	*2692*	*3161*	*2992*	*3003*	*2048*	*2027*	*1919*	*2043*	*1745*
Women	*3458*	*2829*	*3214*	*3046*	*3100*	*2063*	*2104*	*2028*	*2075*	*1796*
All adults	*6675*	*5521*	*6375*	*6038*	*6103*	*4110*	*4130*	*3948*	*4118*	*3542*
Bases (unweighted):										
Men	*3016*	*2457*	*2843*	*2674*	*2745*	*1876*	*1844*	*1771*	*1863*	*1603*
Women	*3684*	*3020*	*3456*	*3327*	*3389*	*2221*	*2288*	*2198*	*2187*	*1980*
All adults	*6700*	*5477*	*6299*	*6001*	*6134*	*4097*	*4132*	*3969*	*4050*	*3583*

a 25 and over = overweight / obese / morbidly obese

b 30 and over = obese / morbidly obese

c 40 and over = morbidly obese

Table 5.2 Adult BMI, 2016, by age and sex

Aged 16 and over with valid height and weight measurements *2016*

BMI (kg/m^2)	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Less than 18.5	6	2	1	2	1	0	2	2
18.5 to less than 25	53	35	28	23	25	15	29	30
25 to less than 30	31	34	43	43	39	44	48	40
30 to less than 40	8	25	25	29	33	35	20	26
40+	2	4	2	3	2	6	2	3
All 25 and over[a]	*41*	*63*	*71*	*75*	*75*	*85*	*70*	*68*
All 30 and over[b]	*10*	*29*	*27*	*32*	*36*	*41*	*22*	*29*
Mean	24.4	27.7	27.5	28.2	28.4	29.7	27.5	27.7
Standard error of the mean	0.50	0.52	0.32	0.34	0.27	0.37	0.38	0.17
Women								
Less than 18.5	3	2	0	1	2	1	2	2
18.5 to less than 25	58	45	41	32	31	26	28	37
25 to less than 30	21	26	27	33	40	41	39	32
30 to less than 40	17	22	23	30	23	28	30	25
40+	1	6	8	5	4	4	1	4
All 25 and over[a]	*39*	*53*	*58*	*67*	*67*	*73*	*70*	*61*
All 30 and over[b]	*18*	*27*	*31*	*34*	*27*	*32*	*31*	*29*
Mean	25.1	27.4	27.9	28.6	28.0	28.4	27.8	27.7
Standard error of the mean	0.55	0.47	0.47	0.38	0.33	0.36	0.37	0.18
All adults								
All 25 and over[a]	*40*	*58*	*64*	*71*	*71*	*78*	*70*	*65*
All 30 and over[b]	*14*	*28*	*29*	*33*	*31*	*36*	*27*	*29*
Mean	24.8	27.5	27.7	28.4	28.2	29.0	27.7	27.7
Standard error of the mean	0.38	0.36	0.29	0.27	0.21	0.27	0.27	0.13
Bases (weighted):								
Men	*237*	*298*	*278*	*326*	*278*	*203*	*126*	*1745*
Women	*220*	*281*	*279*	*349*	*280*	*233*	*154*	*1796*
All adults	*457*	*579*	*557*	*674*	*558*	*436*	*280*	*3542*
Bases (unweighted):								
Men	*139*	*188*	*238*	*293*	*311*	*275*	*159*	*1603*
Women	*161*	*266*	*293*	*383*	*357*	*329*	*191*	*1980*
All adults	*300*	*454*	*531*	*676*	*668*	*604*	*350*	*3583*

a 25 and over = overweight (including obese)

b 30 and over = obese

Table 5.3 Adult BMI (age-standardised), 2016, by area deprivation and sex

Aged 16 and over with valid height and weight measurements *2016*

BMI (kg/m^2)	Scottish Index of Multiple Deprivation				
	5th (Least deprived)	4th	3rd	2nd	1st (Most deprived)
	%	%	%	%	%
Men					
Less than 18.5	1	0	2	3	2
18.5 to less than 25	36	29	28	22	30
25 to less than 30	42	44	41	34	38
30 to less than 40	19	24	25	37	25
40+	2	2	3	4	4
All 25 and over[a]	*62*	*71*	*70*	*74*	*67*
All 30 and over[b]	*20*	*26*	*28*	*40*	*29*
Mean	26.8	27.6	27.6	28.7	27.8
Standard error of the mean	0.34	0.31	0.34	0.50	0.44
Women					
Less than 18.5	2	2	1	2	2
18.5 to less than 25	48	40	32	31	35
25 to less than 30	30	35	33	35	29
30 to less than 40	19	19	28	27	29
40+	2	3	6	5	5
All 25 and over[a]	*50*	*58*	*67*	*67*	*63*
All 30 and over[b]	*20*	*23*	*34*	*32*	*35*
Mean	26.2	27.1	28.3	28.4	28.3
Standard error of the mean	0.32	0.33	0.41	0.40	0.36
All adults					
All 25 and over[a]	*56*	*64*	*68*	*71*	*65*
All 30 and over[b]	*20*	*24*	*31*	*36*	*32*
Mean	26.5	27.3	28.0	28.5	28.1
Standard error of the mean	0.26	0.24	0.26	0.33	0.32
Bases (weighted):					
Men	*398*	*331*	*374*	*309*	*331*
Women	*387*	*312*	*379*	*329*	*394*
All adults	*785*	*642*	*754*	*638*	*724*
Bases (unweighted):					
Men	*376*	*359*	*363*	*265*	*240*
Women	*427*	*413*	*456*	*344*	*340*
All adults	*803*	*772*	*819*	*609*	*580*

a 25 and over = overweight (including obese)

b 30 and over = obese

Table 5.4 Adult BMI, 2014/2016 combined, by consumption of foods and drinks high in sugar and/or fat

Aged 16 and over with valid height and weight measurements — *2014/2016 combined*

Frequency of consumption of foods and drinks high in sugar and/or fat	Underweight/ Normal weight	Overweight	Obese / Morbidly obese
	%	%	%
Men			
Sweets or chocolates once a day or more	33	29	25
Biscuits once a day or more	36	31	30
Cakes 2+ times a week	35	37	29
Ice-cream once a week or more	27	30	34
Non-diet soft drinks once a day or more	32	23	24
Sugary foods / drinks once a day or more[a]	*79*	*76*	*72*
Women			
Sweets or chocolates once a day or more	29	26	24
Biscuits once a day or more	24	28	27
Cakes 2+ times a week	32	35	30
Ice-cream once a week or more	21	27	25
Non-diet soft drinks once a day or more	20	18	24
Sugary foods / drinks once a day or more[a]	*71*	*71*	*68*
All adults			
Sweets or chocolates once a day or more	31	27	25
Biscuits once a day or more	29	30	28
Cakes 2+ times a week	33	37	29
Ice-cream once a week or more	24	29	29
Non-diet soft drinks once a day or more	25	21	24
Sugary foods / drinks once a day or more[a]	*75*	*74*	*70*
Bases (weighted):			
Men	*521*	*735*	*455*
Women	*710*	*577*	*494*
All adults	*1231*	*1312*	*949*
Bases (unweighted):			
Men	*436*	*712*	*437*
Women	*705*	*636*	*565*
All adults	*1141*	*1348*	*1002*

a Sugary snacks include sweets or chocolates, biscuits, cakes, ice cream and non-diet soft drinks

Table 5.5 Proportion of children with BMI within the healthy range, at risk of overweight and at risk of obesity, 1998 to 2016

Aged 2-15 with valid height and weight measurements[a] *1998 - 2016*

BMI status (National BMI percentiles)	1998	2003	2008	2009	2010	2011	2012	2013	2014	2015	2016
	%	%	%	%	%	%	%	%	%	%	%
Boys											
Within healthy range[b]	70	65	61	68	65	63	65	67	70	73	70
Outwith healthy range[c]	30	35	39	32	35	37	35	33	30	27	30
At risk of overweight (including obesity)[d]	29	34	38	31	33	36	34	31	28	26	28
At risk of obesity[e]	15	18	19	17	18	20	20	17	16	15	14
Girls											
Within healthy range[b]	70	69	72	70	70	68	70	72	65	70	71
Outwith healthy range[c]	30	31	29	30	31	32	30	28	35	30	29
At risk of overweight (including obesity)[d]	29	30	28	29	30	29	27	27	34	29	29
At risk of obesity[e]	14	14	14	16	14	15	14	15	18	14	14
All children											
Within healthy range[b]	70	67	66	69	67	65	68	70	68	72	70
Outwith healthy range[c]	30	33	34	31	33	35	33	30	32	28	30
At risk of overweight (including obesity)[d]	29	32	33	30	31	33	31	29	31	28	29
At risk of obesity[e]	14	16	17	16	16	17	17	16	17	15	14
Bases (weighted):											
Boys	*985*	*1243*	*669*	*958*	*641*	*655*	*663*	*687*	*620*	*502*	*548*
Girls	*931*	*1182*	*621*	*924*	*612*	*621*	*620*	*660*	*590*	*467*	*539*
All children	*1916*	*2425*	*1290*	*1882*	*1253*	*1276*	*1283*	*1347*	*1210*	*969*	*1088*
Bases (unweighted):											
Boys	*1780*	*1208*	*652*	*967*	*662*	*643*	*630*	*678*	*608*	*508*	*533*
Girls	*1704*	*1215*	*640*	*914*	*569*	*626*	*644*	*630*	*602*	*452*	*542*
All children	*3484*	*2423*	*1292*	*1881*	*1231*	*1269*	*1274*	*1308*	*1210*	*960*	*1075*

a Children whose BMI was more than 7 standard deviations above or below the norm for their age were excluded from the table

b BMI above 2nd percentile, below 85th percentile

c BMI at or below 2nd percentile, at or above 85th percentile

d BMI at or above 85th percentile

e BMI at or above 95th percentile

Table 5.6 Children's BMI, 2015/2016 combined, by area deprivation and sex

Aged 2-15 with valid height and weight measurements[a] *2015/2016 combined*

BMI status (National BMI percentiles)	Scottish Index of Multiple Deprivation				
	5th (Least deprived)	4th	3rd	2nd	1st (Most deprived)
	%	%	%	%	%
Boys					
Within healthy range[b]	78	75	74	67	63
Outwith healthy range[c]	22	25	26	33	37
At risk of overweight (including obesity)[d]	21	23	23	32	35
At risk of obesity[e]	9	13	13	20	18
Girls					
Within healthy range[b]	72	72	71	65	71
Outwith healthy range[c]	28	28	29	35	29
At risk of overweight (including obesity)[d]	28	28	28	34	29
At risk of obesity[e]	15	16	12	12	13
All children					
Within healthy range[b]	75	73	73	66	67
Outwith healthy range[c]	25	27	27	34	33
At risk of overweight (including obesity)[d]	25	26	25	33	32
At risk of obesity[e]	12	14	12	16	16
Bases (weighted):					
Boys	*232*	*206*	*211*	*176*	*231*
Girls	*214*	*221*	*197*	*182*	*204*
All children	*446*	*428*	*408*	*359*	*435*
Bases (unweighted):					
Boys	*220*	*218*	*216*	*170*	*217*
Girls	*207*	*227*	*198*	*176*	*186*
All children	*427*	*445*	*414*	*346*	*403*

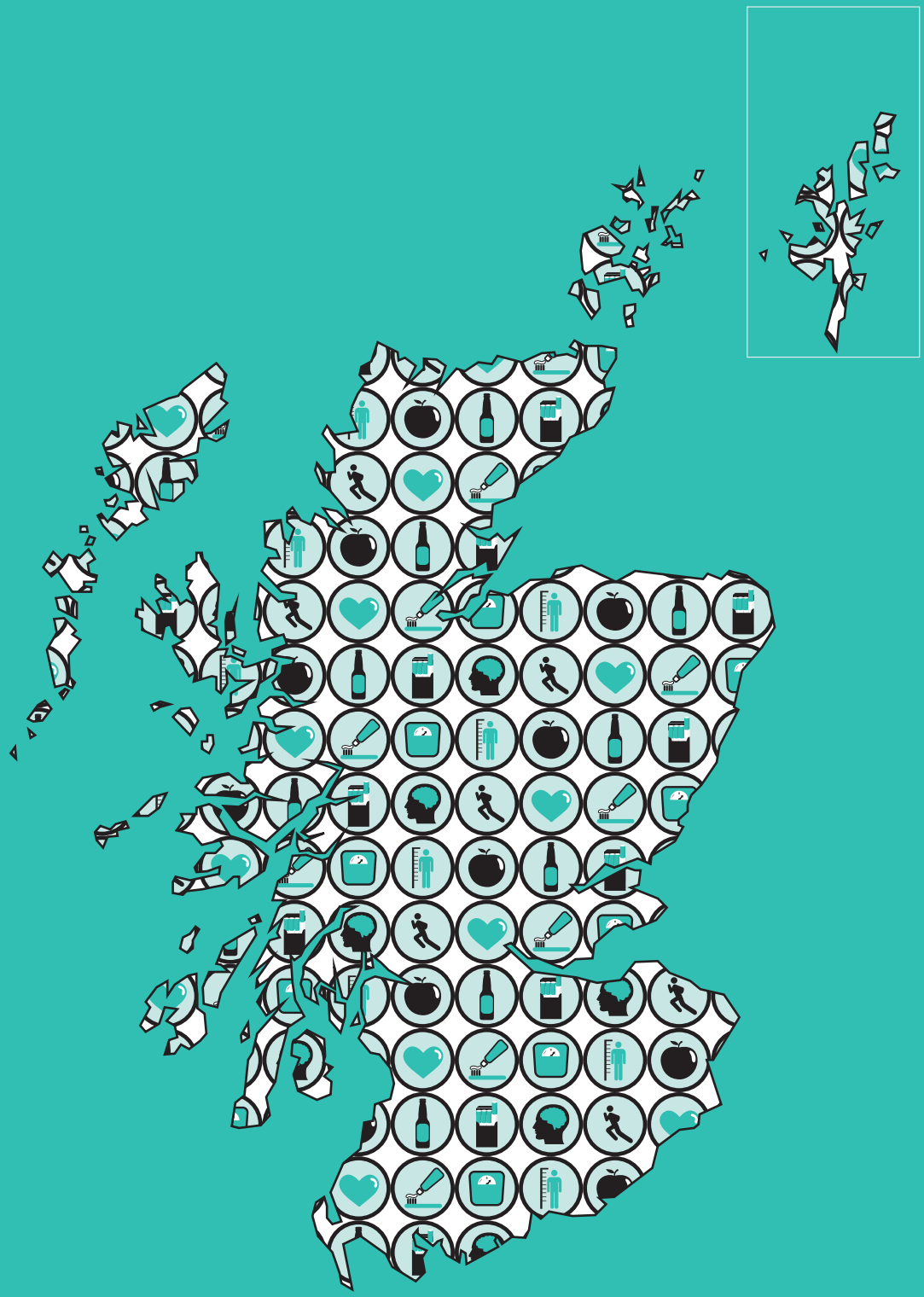
a Children whose BMI was more than 7 standard deviations above or below the norm for their age were excluded from the table

b BMI above 2nd percentile, below 85th percentile

c BMI at or below 2nd percentile, at or above 85th percentile

d BMI at or above 85th percentile

e BMI at or above 95th percentile

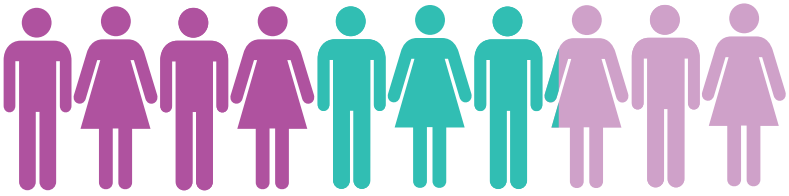


Chapter 6

Multiple Risks

SUMMARY

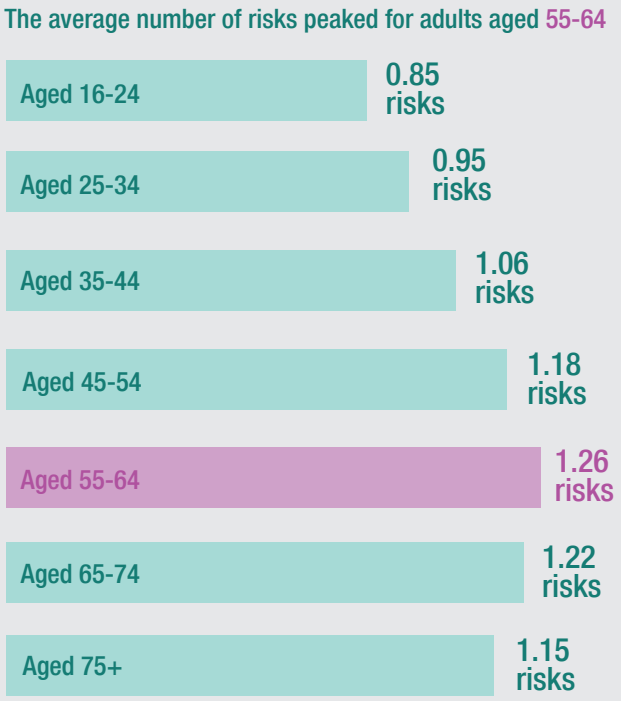
- In 2016, 40% of adults had one risk factor and 31% had multiple risk factors (two or more) with just 1% of these exhibiting all four risk factors measured (smoking, harmful drinking, low physical activity and obesity).



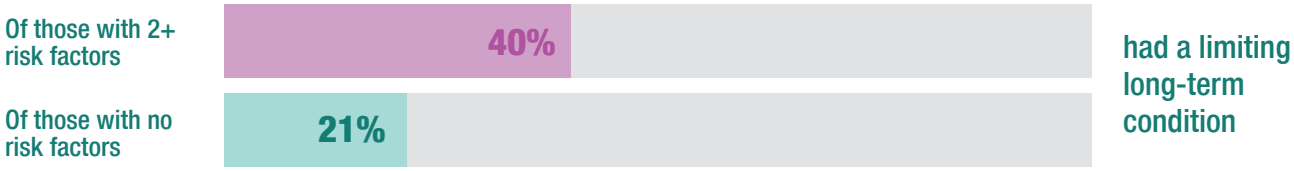
40% of adults had 1 risk factor

31% had 2+ factors

- The number of adults with multiple risks (two or more) increased with age from those aged 16-24 (20%) to those aged 55-64 (39%) before declining to 33% of those aged 75 or over.
- The mean number of risks for all adults was 1.10 risks with higher mean risks for men (1.14) than for women (1.05).
- Among those with only one of the risk factors, the most common for men was drinking over the recommended limit (15% of men reporting this as their only risk) and for women the most common single risk was failing to meet the physical activity recommendation (16% of women).
- For those reporting two risk factors, failing to meet physical activity recommendations and obesity was the most common combination. Women were significantly more likely to have this combination than men (11% of all women compared to 6% of men).



- The proportion of all adults assessed to be failing to meet physical activity recommendations and obese only increased with age, from 3% of those aged 16-24 to 18% of those aged 75 and over. A similar age-related pattern is seen for adults who both smoked and failed to meet physical activity recommendations: just 2% of those aged 16-24 exhibited these risks, rising to 5-6% of those aged 55 and over.
- Adults living in the most deprived areas were twice as likely to have two or more risk factors (41%) as those living in the least deprived areas (20%).
- Adults who reported having two or more age-standardised risk factors (smoking, alcohol consumption, obesity, or low exercise levels) were more likely to have a long-term condition (54%) than adults with one risk factor (44%) or no risk factor (37%).



6 MULTIPLE RISKS

Anna Terje

6.1 INTRODUCTION

As a modern, developed society, Scotland faces substantial challenges to public health as a result of lifestyle behaviours and social-cultural norms that counteract positive health choice making amongst the population. These social determinants therefore are key risks that impact on the health and wellbeing of individuals, families and communities. The impact of these socially determined health risks is evident across the whole life-span. The prevalence of multiple risk factors is a pervasive problem and one where adverse socio-economic gradients remain largely unchanged[1, 2]. Improved understanding of where and how they occur is crucial to raising awareness and informing strategies to encourage and reinforce healthy lifestyles in Scotland.

The population health implications of multiple overlaying risks are challenging, given that many of the individual risks are themselves part of a complex web of causation (for example, obesity), and the policy interventions available are themselves multi-faceted. However, the development of more holistic interventions that address multiple risk behaviours is relatively rare. This is in part due to the complexity of delivery, an evidence base that is dominated by interventions that tackle specific risks such as smoking cessation[3], and the lack of evidence for the efficacy of holistic interventions, for example in reducing heart disease mortality[4]. The balance of evidence also favours universal population-level approaches, rather than those solely targeting individual behavioural risk factors, particularly when the aim is to improve health without widening health inequalities[5].

6.1.1 Policy background

In recognition of the challenge of the impact of multiple risks on the health of the Scottish population, the Scottish Government aims to set clear national public health priorities for Scotland as a whole in 2017 to be led by a new single national public health body which will be established by 2019. The background to this can be found within the Public Health Review which, published last February, made several recommendations about how public health should be strengthened. The Scottish Government's Health and Social Care Delivery Plan translated these recommendations into three specific Government commitments:

- to work with SOLACE and COSLA to produce and publish a set of national public health priorities by the end of 2017;
- the establishment of a new, single, national body for public health in Scotland by 2019; and
- the establishment of local joint public health partnerships between local authorities, NHS Scotland and others to drive national public health priorities and adopt them to local contexts across the whole of Scotland by 2020.

The public health priorities will include targeting particular health behaviours, actions to reduce avoidable harm and ill health based on a population approach to prevention, early intervention and treatment that reaches across the life-span[6]. Key areas of public health risk are alcohol and/or tobacco use, diet and obesity, mental health and physical activity. The extent to which the new actions will incorporate a holistic approach to interventions addressing multiple risks is not yet clear.

6.1.2 Reporting on multiple risks in the Scottish Health Survey

In 2010 the prevalence of multiple risks for poor health among adults in Scotland was explored in the Scottish Health Survey (SHeS)[7]. The focus was on the following five risks: smoking, hazardous or harmful alcohol consumption, overweight and obesity, low fruit and vegetable consumption and low physical activity levels. These factors are known to impact negatively on individual and population health and feature among the ten risks that have been estimated to contribute most to disease across the globe[8]. This approach was extended in the 2013 SHeS annual report[9] to include a wider range of risk measures, spanning a larger number of health domains. This provided a more detailed account of the myriad of ways in which risks and vulnerabilities occur in the population, which most commonly co-exist and how they are distributed between men and women, across the life-span and by deprivation levels.

This chapter first reports on the prevalence of multiple risks by age and sex for 2016, using smoking, harmful drinking, low physical activity and obesity as risk categories to assign a multiple risk score to individuals of between 0 and 4 risks. This is followed by an analysis of the associations between these risks.

The area deprivation data are presented in Scottish Index of Multiple Deprivation (SIMD) quintiles. Where appropriate, to ensure that comparisons are not confounded by different age profiles within categories, data have been age-standardised. Readers should refer to the Glossary at the end of this Volume for a detailed description of SIMD, BMI and age-standardisation. Supplementary tables are also available on the Scottish Government SHeS website[10].

6.1.3 Methods and definitions

There is detailed discussion of the individual risk factors used here, that is, alcohol, smoking, physical activity and overweight and obesity in chapters 1, 2, 3 and 5 respectively. For the purposes of this chapter risk factors are defined as being a current cigarette smoker, drinking more than the UK recommended weekly guidelines, WHO Body Mass Index (BMI) classifications of adult obesity and those not meeting the UK physical activity guidelines for adults.

For detailed methodology and definitions for:

- Alcohol consumption guidelines see Chapter 1, Section 1.2.
- BMI see Chapter 5, Section 5.2.
- Physical activity guidelines see Chapter 3, Section 3.
- Smoking status see Chapter 2, section 2.2.
- Self-reported long-term conditions see Chapter 7, section 7.2.

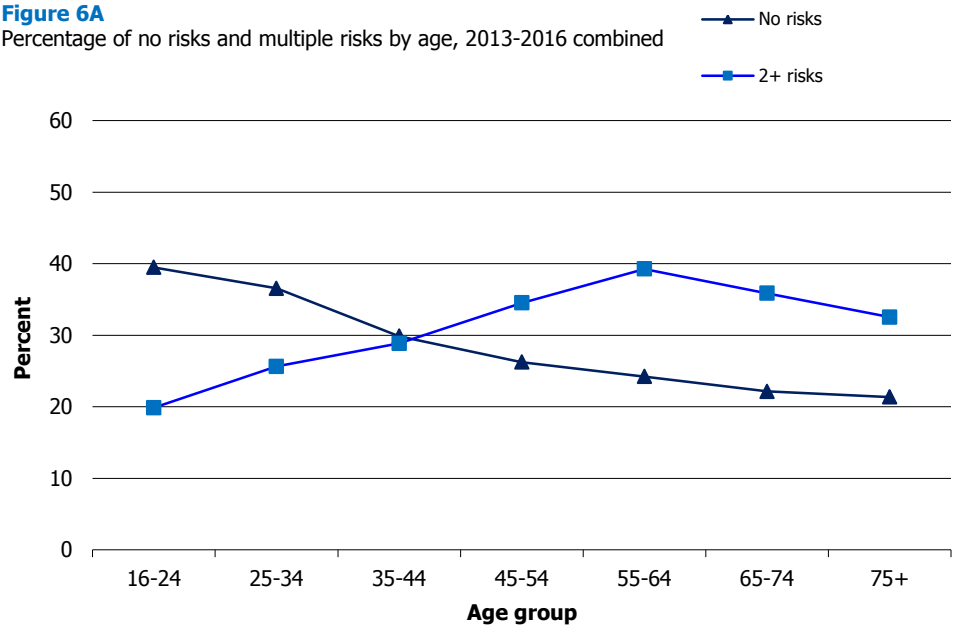
6.2 NUMBERS OF RISKS BY AGE AND SEX FOR 2013-2016 COMBINED

This section looks at the numbers of risks exhibited by adults (aged 16 and over), providing the percentages with one, two, three, four and none of the following risk types: smoking, hazardous or harmful alcohol consumption, overweight and obesity, and low physical activity levels.

Adults were most commonly assessed to have one risk factor (40%), 31% of adults had multiple risk factors (two or more) with just 1% of these exhibiting all four risk factors measured. Just under a third (29%) of all adults identified as having none of the risk factors. Overall, the mean number of risks among all adults was 1.1 risks.

There was a significant association between age and the number of risks reported, as shown in Figure 6A and Table 6.1. The percentage of adults with none of the risk factors was higher at younger ages (39% among those aged 16-24 compared with 21% among those aged 75 and over). The number of adults exhibiting multiple risks (two or more) increased with age from 20% of those aged 16-24 to 39% of those ages 55-64 before declining to 33% of those aged 75 or over. These patterns were observed for both men and women. The prevalence of having all four risks was low for all ages, with percentages between 0% and 1% for all age / sex combination groups except men aged 55-64 (2%).

Figure 6A
Percentage of no risks and multiple risks by age, 2013-2016 combined



The mean number of risks was also significantly associated with age, increasing from 0.85 risks for those aged 16-24 to a peak of 1.26 risks for those aged 55-64 before reducing to 1.15 for those aged 75 and over).

The mean number of risk factors for all ages combined was 1.10 for all adults. There were significant differences between the mean risk for men and women (1.14 for men compared with 1.05 for women). This was largely due to differences in mean risk between the sexes among those aged 45-74, where men had higher mean risks than women (1.25-1.37 compared with 1.12-1.16). The age-related patterns of the mean number of risks were also significantly different for men and women. The number of mean risks rose steadily for women with age, from 0.88 among those aged 16-24 to 1.19 for those aged 75 and over. The mean number of risks for men increased with age from 0.82 for those aged 16-24 to 1.37 for those aged 55-64 but were lower thereafter (1.29 for those aged 65-74 and 1.08 for those aged 75 and over). **Figure 6A, Table 6.1**

6.3 PREVALENCE OF RISK TYPES BY AGE AND SEX FOR 2013-2016 COMBINED

This section describes the different combinations of risk types.

For all ages over 16 combined, 40% of men and women were assessed to have one risk only. Among the single risks, the most prevalent for men was drinking over the recommended limit (15%), while the most common risk for women was failing to meet the physical activity recommendation (16%).

Overall, 25% of men and 24% of women exhibited two risks. The most common combination of two risks was failing to meet the physical activity recommendations and obesity; 9% of all adults exhibited these two risks, with women significantly more likely than men to do so (11% compared with 6%). Just 7% of men and 5% of women exhibited three of the four risks, with combinations featuring failing to meet physical activity recommendations being the most prevalent among both men and women (1-2%).

There were some sex differences in combinations of risk. For example, the risk combination of smoking and drinking over the recommended limit was significantly more prevalent among men (6%) than women (2%). Furthermore, men were significantly more likely to be drinking over the recommended limit and also be assessed to be obese than women (5% and 2% respectively).

Prevalence of the various combinations of types of risks reported were significantly associated with age. For example, the percentage of all adults assessed to be both failing to meet physical activity recommendations and obese increased with age, rising from just 3% among those aged 16-24 to 18% of those aged 75 and over. A similar age-related pattern could be observed for adults who both smoked and failed to meet physical activity recommendations: just 2% of those aged 16-24 exhibited these risks, rising to 5-6% of those aged 55 and over.

The combined risks of drinking over the recommended limit and failing to meet physical activity recommendations also showed an increase with age, with just

2% of those aged 16-44 in this category, compared with 5% of those aged 75 and over. The reverse pattern was true for the combined risks of smoking and drinking over the recommended limit which fell with age from 6% of those aged 16-24 to 0% of those aged 75 and over.

Furthermore, the age group most likely to both drink and be obese was those aged 45-64, with prevalence estimates of 5-6% compared with 1-4% at younger and older ages. These age-related patterns were observed for both men and women.

Men aged 45-74 were most likely to have three risks (9-12% compared to 3-5% for other age-groups). For women there was no clear age related pattern. **Table 6.2**

6.4 PREVALENCE OF LONG-TERM CONDITIONS IN 2016, BY MULTIPLE RISKS

Table 6.3 shows age-standardised prevalence estimates for long-term conditions by multiple risks and sex. Long-term condition was defined as any physical or mental health condition or illness lasting – or likely to last – for 12 months or more and then further defined as limiting daily activities or not. To ensure that the comparisons presented are not confounded by the different age profiles of the different categories, the data have been age-standardised.

In 2016, prevalence of long-term conditions was significantly associated with multiple risks. Men who reported having two or more risk factors were more likely to have a long-term condition (49%) than men with one risk factor (42%) or no risk factor (33%); the corresponding figures for women were 60%, 46% and 41%, respectively.

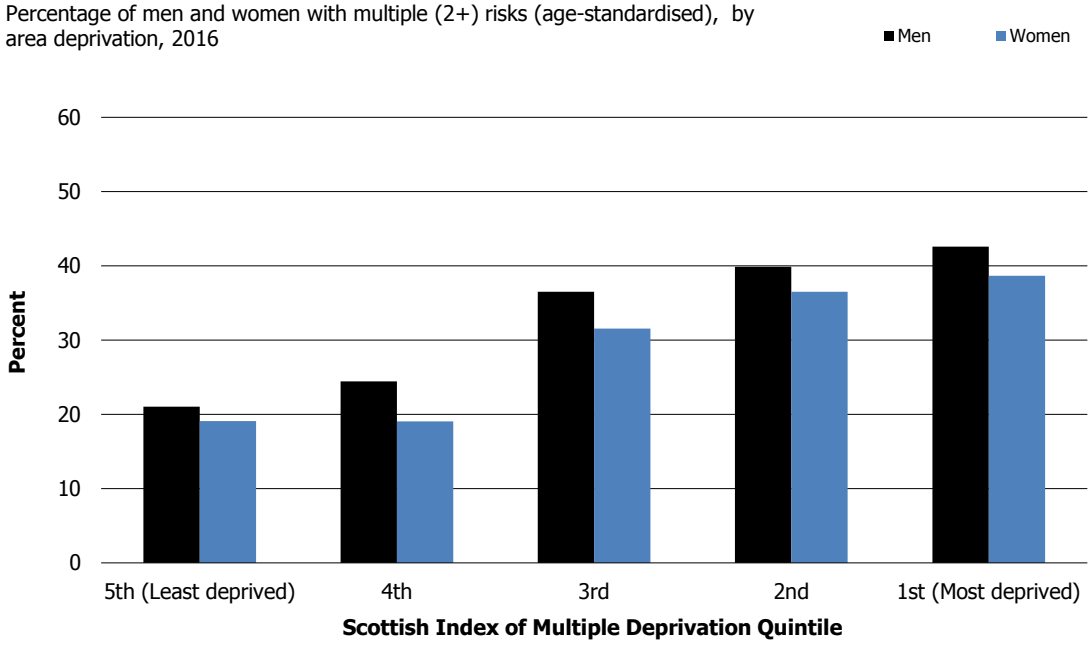
Prevalence of limiting long-term conditions was almost double for those who reported having two or more lifestyle risk factors (age-standardised prevalence of 35% among men and 45% among women) compared with no risk lifestyle risk factors (17% among men and 25% among women). There was no significant association between number of risks and non-limiting long-term conditions. **Table 6.3**

6.5 MULTIPLE RISKS IN 2016, BY AREA DEPRIVATION

There were significant associations between age-standardised number of risks and area deprivation.

As shown in Figure 6B, the age-standardised prevalence of multiple risks (two or more) among all adults increased with area deprivation; 20% of adults in the least deprived area quintile were assessed to have multiple risks, compared with 41% of those in the most deprived quintile. A similar pattern was found among both men and women.

Figure 6B
Percentage of men and women with multiple (2+) risks (age-standardised), by area deprivation, 2016



Conversely, the pattern was reversed for the age-standardised percentage of adults with no risks; 40% of adults in the least deprived quintile exhibited no risks, compared with 21% in the two most deprived quintiles. Again this pattern was similar for both men and women.

The pattern for adults assessed to have one risk was less clear with no significant association between prevalence of one risk and deprivation.

Figure 6B, Table 6.4

References and notes

[1] Hotchkiss, JW,, Davies, C, Gray, L, Brombley, C, Capewell S and Leyland AH (2011). Trends in adult cardiovascular disease risk factors and their socio-economic patterning in the Scottish population 1995–2008: cross-sectional surveys. *BMJ Open*; Vol 1, Issue 1

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[8] Murray, CJL and Lopez, A (2013). Measuring the Global Burden of Disease. *New England Journal of Medicine*. 369:448-457.

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[10] See: www.gov.scot/scottishhealthsurvey

Table list

Table 6.1 Number of multiple risks, 2013-2016 combined, by age and sex

Aged 16 and over *2013- 2016 combined*

Number of risks	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
No risks	40	34	27	23	22	21	25	27
1 risk	42	38	42	40	35	40	45	40
2 risks	15	23	25	27	29	28	25	25
3 risks	3	5	5	9	12	10	4	7
4 risks	0	1	1	1	2	1	-	1
2+ risks	*19*	*29*	*30*	*37*	*43*	*39*	*30*	*33*
Mean	*0.82*	*1.01*	*1.10*	*1.25*	*1.37*	*1.29*	*1.08*	*1.14*
Standard error of the mean	*0.04*	*0.04*	*0.03*	*0.03*	*0.03*	*0.03*	*0.03*	*0.01*
Women								
No risks	39	39	32	29	27	23	18	30
1 risk	40	38	40	38	38	44	47	40
2 risks	16	18	21	25	28	29	32	24
3 risks	5	3	5	7	7	4	3	5
4 risks	1	1	1	1	0	0	0	0
2+ risks	*21*	*23*	*27*	*32*	*35*	*33*	*35*	*30*
Mean	*0.88*	*0.88*	*1.01*	*1.12*	*1.16*	*1.15*	*1.19*	*1.05*
Standard error of the mean	*0.04*	*0.03*	*0.03*	*0.03*	*0.03*	*0.03*	*0.03*	*0.01*
All adults								
No risks	39	37	30	26	24	22	21	29
1 risk	41	38	41	39	37	42	46	40
2 risks	16	21	23	26	29	28	29	24
3 risks	4	4	5	8	9	7	3	6
4 risks	0	1	1	1	1	1	0	1
2+ risks	*20*	*26*	*29*	*35*	*39*	*36*	*33*	*31*
Mean	*0.85*	*0.95*	*1.06*	*1.18*	*1.26*	*1.22*	*1.15*	*1.10*
Standard error of the mean	*0.03*	*0.03*	*0.02*	*0.02*	*0.02*	*0.02*	*0.02*	*0.01*
Bases (weighted):								
Men	*991*	*1257*	*1242*	*1415*	*1206*	*910*	*535*	*7557*
Women	*905*	*1248*	*1241*	*1497*	*1248*	*992*	*692*	*7824*
All adults	*1896*	*2505*	*2483*	*2913*	*2455*	*1902*	*1227*	*15381*
Bases (unweighted):								
Men	*610*	*868*	*1086*	*1270*	*1258*	*1168*	*686*	*6946*
Women	*662*	*1172*	*1358*	*1620*	*1504*	*1342*	*855*	*8513*
All adults	*1272*	*2040*	*2444*	*2890*	*2762*	*2510*	*1541*	*15459*

Table 6.2 Risk combinations, 2013-2016 combined, by age and sex

Aged 16 and over *2013-2016 combined*

Risk combinations	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
No risks	*40*	*34*	*27*	*23*	*22*	*21*	*25*	*27*
One risk only	*42*	*38*	*42*	*40*	*35*	*40*	*45*	*40*
Current smoking risk only	8	10	9	8	3	2	1	7
Drinking over recommended limit risk only	20	14	14	15	14	17	9	15
Failing to meet physical activity recommendation risk only	8	5	8	6	8	11	29	9
Obesity risk only	5	8	11	10	9	10	6	9
Two risks	*15*	*23*	*25*	*27*	*29*	*28*	*25*	*25*
Current smoking risk and drinking over recommended limit risk	9	8	7	5	3	3	0	6
Current smoking risk and failing to meet physical activity recommendation risk	1	2	3	4	6	4	4	3
Current smoking risk and obesity risk	0	2	2	1	1	1	0	1
Drinking over recommended limit risk and failing to meet physical activity recommendation risk	1	3	3	3	3	4	7	3
Drinking over recommended limit risk and obesity risk	2	4	5	7	8	6	2	5
Failing to meet physical activity recommendation risk and obesity risk	2	4	5	7	8	10	12	6
Three risks	*3*	*5*	*5*	*9*	*12*	*10*	*4*	*7*
Current smoking risk, drinking over recommended limit risk and failing to meet physical activity recommendation risk	1	3	1	3	4	2	1	2
Current smoking risk, drinking over recommended limit risk and obesity risk	1	0	1	1	1	0	-	1
Current smoking risk, failing to meet physical activity recommendation risk and obesity risk	1	2	1	2	2	2	1	2
Drinking over recommended limit risk, failing to meet physical activity recommendation risk and obesity risk	1	1	2	2	5	5	2	2
Four risks	*0*	*1*	*1*	*1*	*2*	*1*	*-*	*1*

Continued…

Table 6.2 - *Continued*

Aged 16 and over *2013-2016 combined*

Risk combinations	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Women								
No risks	*39*	*39*	*32*	*29*	*27*	*23*	*18*	*30*
One risk only	*40*	*38*	*40*	*38*	*38*	*44*	*47*	*40*
Current smoking risk only	7	10	9	8	5	2	2	7
Drinking over recommended limit risk only	10	6	7	10	8	8	1	8
Failing to meet physical activity recommendation risk only	17	12	11	9	14	21	38	16
Obesity risk only	5	10	13	12	11	13	5	10
Two risks	*16*	*18*	*21*	*25*	*28*	*29*	*32*	*24*
Current smoking risk and drinking over recommended limit risk	4	3	3	3	1	0	0	2
Current smoking risk and failing to meet physical activity recommendation risk	2	3	4	5	6	7	6	4
Current smoking risk and obesity risk	2	2	3	2	2	1	0	2
Drinking over recommended limit risk and failing to meet physical activity recommendation risk	2	1	2	3	3	2	3	2
Drinking over recommended limit risk and obesity risk	0	2	2	2	3	1	0	2
Failing to meet physical activity recommendation risk and obesity risk	5	7	8	10	13	17	23	11
Three risks	*5*	*3*	*5*	*7*	*7*	*4*	*3*	*5*
Current smoking risk, drinking over recommended limit risk and failing to meet physical activity recommendation risk	1	1	1	1	2	1	0	1
Current smoking risk, drinking over recommended limit risk and obesity risk	1	0	1	0	0	0	-	0
Current smoking risk, failing to meet physical activity recommendation risk and obesity risk	2	2	3	3	3	2	1	2
Drinking over recommended limit risk, failing to meet physical activity recommendation risk and obesity risk	0	0	1	2	2	1	1	1
Four risks	*1*	*1*	*1*	*1*	*0*	*0*	*0*	*0*

Continued…

Table 6.2 - *Continued*

Aged 16 and over *2013-2016 combined*

Risk combinations	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
All adults								
No risks	*39*	*37*	*30*	*26*	*24*	*22*	*21*	*29*
One risk only	*41*	*38*	*41*	*39*	*37*	*42*	*46*	*40*
Current smoking risk only	8	10	9	8	4	2	2	7
Drinking over recommended limit risk only	16	10	11	12	11	12	5	11
Failing to meet physical activity recommendation risk only	12	9	9	8	11	16	34	12
Obesity risk only	5	9	12	11	10	11	6	10
Two risks	*16*	*21*	*23*	*26*	*29*	*28*	*29*	*24*
Current smoking risk and drinking over recommended limit risk	6	5	5	4	2	2	0	4
Current smoking risk and failing to meet physical activity recommendation risk	2	3	4	4	6	5	5	4
Current smoking risk and obesity risk	1	2	3	2	2	1	0	2
Drinking over recommended limit risk and failing to meet physical activity recommendation risk	2	2	2	3	3	3	5	3
Drinking over recommended limit risk and obesity risk	1	3	3	5	6	4	1	3
Failing to meet physical activity recommendation risk and obesity risk	3	6	6	8	10	14	18	9
Three risks	*4*	*4*	*5*	*8*	*9*	*7*	*3*	*6*
Current smoking risk, drinking over recommended limit risk and failing to meet physical activity recommendation risk	1	2	1	2	3	2	1	2
Current smoking risk, drinking over recommended limit risk and obesity risk	1	0	1	1	1	0	-	1
Current smoking risk, failing to meet physical activity recommendation risk and obesity risk	1	2	2	3	2	2	1	2
Drinking over recommended limit risk, failing to meet physical activity recommendation risk and obesity risk	1	0	1	2	3	3	2	2
Four risks	*0*	*1*	*1*	*1*	*1*	*1*	*0*	*1*

Continued…

Table 6.2 - *Continued*

Aged 16 and over *2013-2016 combined*

Risk combinations	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
Bases (weighted):								
Men	*991*	*1257*	*1242*	*1415*	*1206*	*910*	*535*	*7557*
Women	*905*	*1248*	*1241*	*1497*	*1248*	*992*	*692*	*7824*
All adults	*1896*	*2505*	*2483*	*2913*	*2455*	*1902*	*1227*	*15381*
Bases (unweighted):								
Men	*610*	*868*	*1086*	*1270*	*1258*	*1168*	*686*	*6946*
Women	*662*	*1172*	*1358*	*1620*	*1504*	*1342*	*855*	*8513*
All adults	*1272*	*2040*	*2444*	*2890*	*2762*	*2510*	*1541*	*15459*

Table 6.3 Prevalence of long-term conditions in adults (age-standardised), 2016, by multiple risks and sex

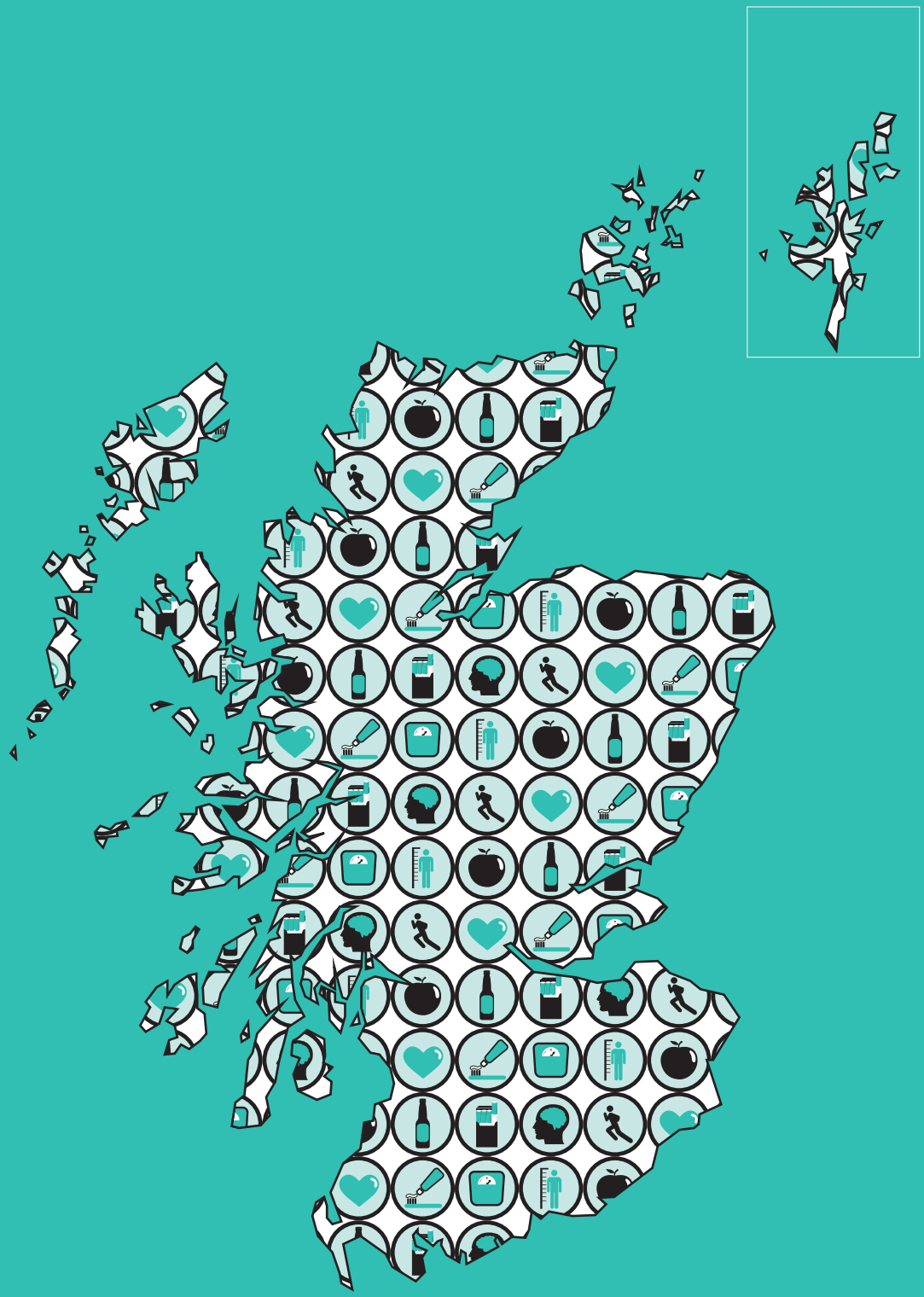
Aged 16 and over *2016*

Long-term conditions and limiting long-term conditions	Multiple risks		
	No risk	1 risk	2+ risks
	%	%	%
Men			
No long-term conditions	67	58	51
Limiting long-term conditions	17	29	35
Non-limiting long-term conditions	16	13	14
Total with conditions	*33*	*42*	*49*
Women			
No long-term conditions	59	54	40
Limiting long-term conditions	25	30	45
Non-limiting long-term conditions	16	16	15
Total with conditions	*41*	*46*	*60*
All adults			
No long-term conditions	63	56	46
Limiting long-term conditions	21	30	40
Non-limiting long-term conditions	16	15	14
Total with conditions	*37*	*44*	*54*
Bases (weighted):			
Men	*483*	*656*	*551*
Women	*539*	*682*	*510*
All adults	*1022*	*1338*	*1061*
Bases (unweighted):			
Men	*440*	*608*	*518*
Women	*593*	*763*	*573*
All adults	*1033*	*1371*	*1091*

Table 6.4 Prevalence of multiple risks (age-standardised), 2016, by area deprivation and sex

Aged 16 and over *2016*

Number of risks	Scottish Index of Multiple Deprivation				
	5th (Least deprived)	4th	3rd	2nd	1st (Most deprived)
	%	%	%	%	%
Men					
No risk	37	35	31	17	20
One risk	42	40	33	43	37
2+ risks	21	24	36	40	43
Women					
No risk	43	38	30	24	22
One risk	38	43	39	39	39
2+ risks	19	19	32	37	39
All adults					
No risk	40	36	30	21	21
One risk	40	42	36	41	38
2+ risks	20	22	34	38	40
Bases (weighted):					
Men	*386*	*327*	*362*	*295*	*321*
Women	*372*	*300*	*358*	*319*	*385*
All adults	*758*	*628*	*720*	*614*	*706*
Bases (unweighted):					
Men	*368*	*354*	*357*	*253*	*235*
Women	*415*	*404*	*441*	*338*	*334*
All adults	*783*	*758*	*798*	*591*	*569*

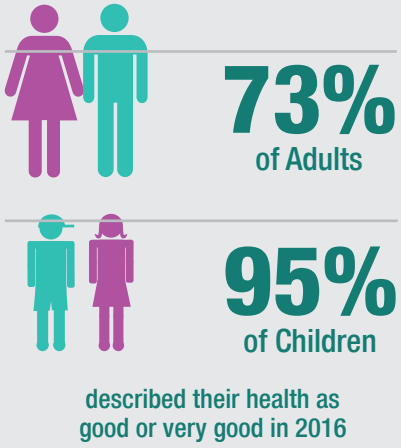


Chapter 7

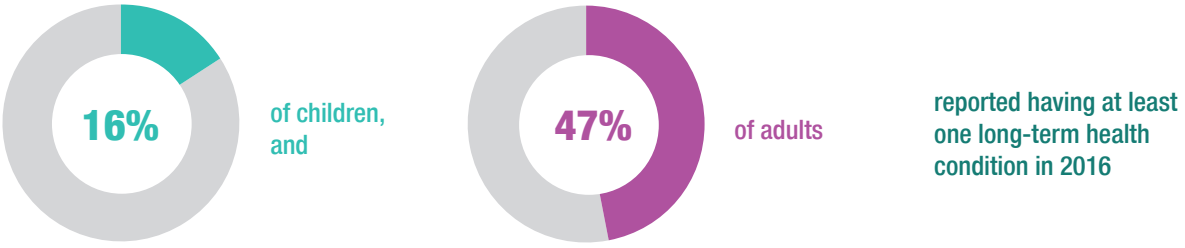
General Health and Caring

SUMMARY

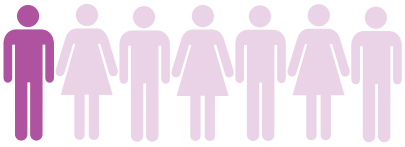
- The proportion of adults reporting to be in 'very good' or 'good' health was significantly higher amongst the youngest age group (88% of those aged 16-24) and lower amongst the oldest age group (52% of those aged 75 and over).
- Almost all children aged 0-15 continued to report to be in 'very good' or 'good' health (95%) in 2015/2016. Overall, girls were more likely than boys to report this (97% and 94% respectively).



- Reported levels of 'good' or 'very good' health were lowest among children aged 14-15 (91%), compared to 95-98% for children aged 0-13.
- The prevalence of limiting long-term health conditions was significantly higher in the older age groups than younger age groups (from 7% of those aged 0-15, to 60% of those aged 75 and over).



- More than one in seven (15%) adults provided regular, unpaid care to a family member, friend or someone else in 2016, with women more likely to do so than men (17% and 13% respectively).
- Of all children aged 4-15, 3% provided care, with older children more likely to provide care than younger (5% of those aged 12-15 compared with 1% of those aged 4-11).
- Women working full time were significantly more likely to provide unpaid care than men working full time (17% and 12% respectively).
- In 2015/2016, adults providing unpaid care were most likely to do so for 5-19 hours per week.
- Those over the age of 65 were most likely to provide more than 50 hours of care per week at 24%, compared with 13-14% of those aged 16-64.



One in seven
(15%) of adults provided regular, unpaid care

Most likely:
women aged 45-54
(27%)

Least likely:
men aged 16-24
(6%)

7 GENERAL HEALTH AND CARING

Diana Bardsley

7.1 INTRODUCTION

This chapter covers three interrelated topics: self-assessed general health, co-morbidity of multiple long-term conditions and caring.

Population measures of self-reported health can be a general indicator of the burden of disease on society. They can reflect subjective experiences of both diagnosed and undiagnosed illnesses, and their severity, which more objective measures for the whole population can sometimes overlook.

Self-assessed general health is often a reflection of the presence or absence of long-term conditions, both physical and mental. In Scotland today people are living longer but with multiple long-term conditions and increasingly complex needs[1]. Such conditions account for 80% of all GP consultations and for 60% of all deaths in Scotland[2]. People with a long-term condition are twice as likely as those without to be admitted to hospital and stay in hospital disproportionately longer[3]. Older people are more likely to have multiple long-term conditions. Given Scotland's ageing population (in 2016, 8% of the population were 75 and over; this is predicted to rise to 14% by 2039[4]), this has become an increasingly important public health issue.

The associations of general health and long term conditions with deprivation, lifestyle risk factors and wider health determinants are also of importance in Scotland given its persistent health inequalities. For example, those living in disadvantaged areas are more than twice as likely to have a long-term condition as those in affluent areas and to develop it an earlier age (up to 10 years earlier)[5].

It is also recognised that the majority of care for those living with long-term conditions is provided by family and other unpaid carers although most will ultimately increasingly require support from health and social care services[5]. It is estimated that around 788,000 people are caring for a relative, friend or neighbour in Scotland including 44,000 people under the age of 18[6]. The provision of unpaid care to family members, friends or others is not shared equally across social groups. Also, the mental and physical health and wellbeing of carers can be negatively affected by the caring demands placed upon them; around a third of carers have reported that caring has a negative impact on their health and the more care that a carer provides, the less likely they are to report good health[6].

The prevalence of long-term conditions therefore represents significant personal, social and economic costs both to individuals and their families as well as to health and care services and Scottish society more widely.

7.1.1 Policy background

The Scottish government recognises the need to change the way services are delivered in the context of the changing Scottish

demographic, notably the ageing population and the increasing number of people living with long term conditions and multi-morbidity. The strategic focus for improving general health and wellbeing and supporting people living with long term conditions is set-out in three over-arching strategies.

The National Clinical Strategy[7], published in 2016, is the high level vision for how health and social care services will develop over the next 10-15 years. **The Health and Social Care Delivery Plan**[8] sets out the programme to further enhance health and social care services so people can live longer, healthier lives at home or in a homely setting. These establish the overarching aims for public health concerned with prevention, early intervention and supported self-management. In **Realising Realistic Medicine**[9], published in 2017, the government sets out plans to adopt Realistic Medicine, moving away from a culture where 'doctor knows best' to one where people receiving care are at the centre of decision-making and professionals are encouraged to take a personalised approach to their care. It aims to reduce harm and waste, tackle unwarranted variation in care, manage clinical risk, and support innovation to improve care and sustainability in the NHS.

Prior to this, in 2008, the Scottish Government's strategy for self-management **Gaun Yersel**[10] was launched, supported annually by the self-management fund. Self-management is a set of approaches which enable people living with long term conditions and those who care for them to take control and manage their own health and care.

One of the Scottish Government's **National Outcomes** is the overall strategic objective for health: We live longer, healthier lives[11]. This is supported by a number of National Indicators including **'improve self-assessed general health'**. Data from SHeS is used to monitor progress towards this indicator. In addition, the purpose target to improve healthy life expectancy over the 2007 to 2017 period uses SHeS data for children (aged 0-15) in the calculations used to measure progress.

The **Carers (Scotland) Act (2016)** will be commenced on April 1, 2018. It extends and enhances the rights of carers to ensure better and more consistent support for carers and young carers so that they can continue to care, if they so wish, in better health and to have a life alongside caring. This builds on a range of national policy drivers. **Caring Together: The Carers Strategy for Scotland 2010-15**[12] was published in July 2010 and set out actions to support carers and ensure their health and wellbeing, including the commitment to the voluntary sector **Short Breaks Fund**[13], and the inclusion of an indicator on carers in the core part of the GP contract[14]. In 2011 **Reshaping Care for Older People**[15] was published with the vision that 'older people are valued as an asset, their voices are heard and they are supported to enjoy full and positive lives in their own home or in a homely setting' and includes ambitions to improve support for unpaid carers.

Recognising that children and young people provide unpaid care, and have particular needs, the Scottish Government, along with COSLA, published a separate strategy **Getting it Right for Young Carers**[16] which aims to ensure that young carers are relieved of inappropriate caring roles and supported to be children first and foremost. Questions to ascertain the prevalence of young carers (aged 4-15) were introduced to SHeS in 2012.

The Scottish Government has recently made commitments to increase the Carers Allowance and introduce a package of new measures to support young carers including a Young Carer Grant for young carers aged 16-18.

7.1.2 Reporting on general health, long-term conditions and caring in the Scottish Health Survey

This chapter reports on self-assessed general health and prevalence of long-term conditions for adults and children. The prevalence of those with caring responsibilities is reported by deprivation, employment status and sex. Finally, hours spent each week providing help or unpaid care is reported.

The area deprivation data are presented in Scottish Index of Multiple Deprivation (SIMD) quintiles. To ensure that the comparisons presented are not confounded by the different age profiles of the quintiles, the data have been age-standardised. Readers should refer to the Glossary at the end of this Volume for a detailed description of both SIMD and age-standardisation.

Supplementary tables on general health and caring are also published on the Scottish Health Survey website[17].

7.2 METHODS AND DEFINITIONS

7.2.1 Self-assessed general health

Each year, participants who are aged 13 and over are asked to rate their health in general with answer options ranging from 'very good' to 'very bad'. For children under the age of 13 the question is answered by the parent or guardian completing the interview on their behalf. This question is used to monitor the National Indicator **'improve self-assessed health'**, while the data for children (aged 0-15) is used in the calculation of healthy life expectancy used to monitor the related purpose target to improve healthy life expectancy between 2007 and 17.

7.2.2 Long-term conditions

All participants were asked if they had any physical or mental health condition or illness lasting - or likely to last - for twelve months or more. Those who reported having such a condition were asked to provide details of the type(s) of conditions or illnesses reported. Answers were

recorded verbatim and then coded by an analyst. These questions did not specify that conditions had to be doctor-diagnosed; responses were thus based on individuals' perceptions.

At a later stage of the interview, participants were asked about a number of specific health conditions, including diabetes and hypertension. If the participant mentioned that they had doctor-diagnosed diabetes or that they had doctor-diagnosed hypertension in response to these questions, but they had not mentioned them as a long-term condition, they were each counted as such a condition.

7.2.3 Caring

The provision of unpaid care is measured by asking participants if they look after, or give any regular help or support to, family members, friends, neighbours or others because of a long-term physical condition, mental ill-health or disability; or problems related to old age. Caring which is done as part of any paid employment is not asked about. From 2014 onwards this question explicitly instructed respondents to exclude caring as part of paid employment. This question has been asked of adults aged 16 and over since 2008, and of children aged 4 to 15 since 2012. Those who say they provide such care are then asked how many hours per week they typically provide. From 2014 onwards this question has also explicitly instructed respondents to exclude caring as part of paid employment. Additional questions explore the impact that caring has on activities. From these additional questions, the impact on employment is reported this year. The support available to carers is also explored but not reported here.

7.3 SELF-ASSESSED GENERAL HEALTH

7.3.1 Self-assessed general health among adults in 2016, by age and sex

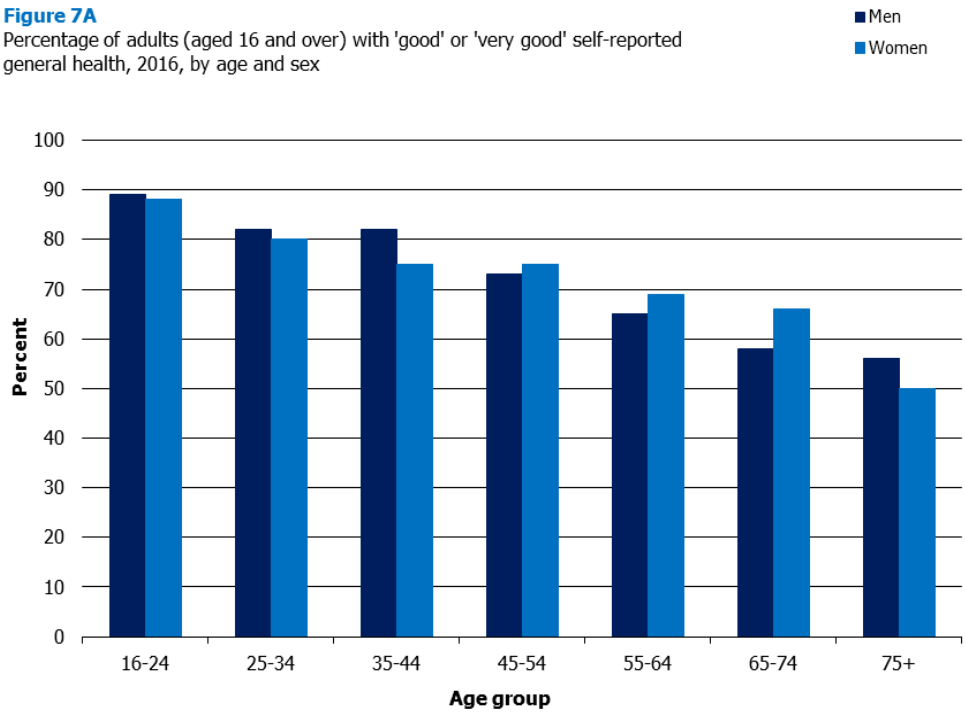
As shown in table 7.1, almost three quarters (73%) of adults aged 16 and over described their health as 'very good' or 'good' in 2016. Approximately one in ten (9%) adults reported their health as being 'bad' or 'very bad'.

As shown in figure 7A, the proportion of adults reporting to be in 'very good' or 'good' health declined significantly with age, from 88% of those aged 16-24, to 52% of those aged 75 and over - a decrease of 36 percentage points.

In a related finding, the percentage of adults reporting to be in 'bad' or 'very bad' health increased significantly with age, from 3% of those aged 16-24, to 18% of those aged 75 and over.

Whilst age was significantly associated with self-assessed general health for adults, sex seemed to have little effect on self-reported general health, with men and women reporting broadly similar levels of health across all age groups (see Figure 7A). **Figure 7A, Table 7.1**

Figure 7A
Percentage of adults (aged 16 and over) with 'good' or 'very good' self-reported general health, 2016, by age and sex



7.3.2 Self-assessed general health among children in 2015/2016 combined, by age and sex

In 2015/2016, almost all children aged 0-15 in Scotland were reported as being in 'very good' or 'good' health (95%), and 4% as having 'fair' general health. Only 1% of children were reported as having 'bad' or 'very bad' general health.

Overall, girls were more likely than boys to report 'good' or 'very good' general health (97% of girls, compared with 94% of boys). There was no difference between the percentage of boys and girls reporting 'bad' or 'very bad' health (both 1%).

Self-assessed health varied significantly by age with reported levels of 'good' or 'very good' health being lower among older children aged 14-15 (91%), compared with children aged 0-13 (95-98%). This finding could in part be explained by the survey design which involved asking parents of children aged 0-11 about their child's health status, and asking children aged 12-15 directly.

The pattern by age was different for girls and boys, with more fluctuation in rates for boys than girls. Furthermore, parents of younger girls (0-7) were more likely to report they had 'good' or 'very good' health than parents of boys in the same age range (97-98% for girls compared with 91-96% for boys). **Table 7.2**

7.4 LONG-TERM CONDITIONS

7.4.1 Prevalence of long-term conditions in 2016, by age and sex

Children

In 2016, almost one in six (16%) children (aged 0-15) had at least one long-term health condition. This proportion was comprised of 8% of children that had non-limiting condition(s) and 7% that had at least one limiting long-term condition[18]. Boys were significantly more likely than girls to have any form of long-term condition (18% and 14% respectively) as well as at least one limiting long-term condition (9% and 6% respectively).

Adults

Around half (47%) of adults aged 16 and over in Scotland were living with at least one long-term condition in 2016. Prevalence of adults with limiting long-term conditions was more than double that of those with non-limiting conditions (33% and 14% respectively).

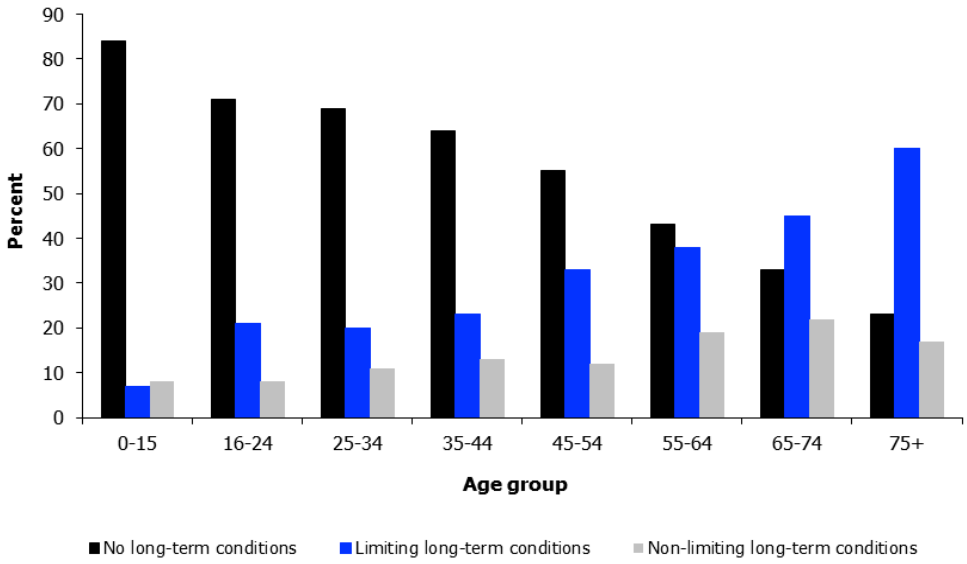
Prevalence of limiting long-term health conditions increased markedly with age, from 21% of those aged 16-24 to 60% of those aged 75 and over. The sharpest increase in limiting long term health conditions occurred between ages 65-74 (45%) and 75 and over (60%) - an increase of 15 percentage points.

Younger people were significantly more likely to be free of long-term health conditions, with prevalence rising with age. Just 23% of those aged 75 and over were free of any long term health conditions, compared with 71% of those aged 16-24 - a difference of 48 percentage points. This pattern by age was true for both men and women.

Women were more likely than men to have one or more limiting long-term health condition (35% and 30% respectively).

Prevalence of adults with non-limiting conditions also varied significantly by age. Although the pattern was not linear, older age groups tended to report higher prevalence than younger age groups (8-13% for those aged 16-54 compared with 17-22% for those aged 55-75 and over). Prevalence of adults with non-limiting conditions did not differ significantly between men and women. **Figure 7B, Table 7.3**

Figure 7B
Prevalence of long-term conditions in adults and children (0-75+), 2016, by age



7.5 PROVISION OF UNPAID CARE

7.5.1 Unpaid caring prevalence in 2016, by age and sex

Adults

Over 1 in 7 (15%) adults aged 16 and over were providing regular, unpaid care to a family member, friend or someone else in 2016.

Women were more likely than men to be providing unpaid care for someone (17% and 13% respectively). The gap between men and women was most notable in the 45-54 year age group (27% of women, compared with 18% of men providing care).

As shown in Figure 7C, caring prevalence increased in line with age up to age 45-54 (9% for those aged 16-24 to 23% for those aged 45-54) before declining with age down to 9% for those aged 75 and over. Of all adults, women aged 45-54 were the most likely to be providing unpaid care (at 27%) and men aged 16-24 were the least likely to (at 6%).

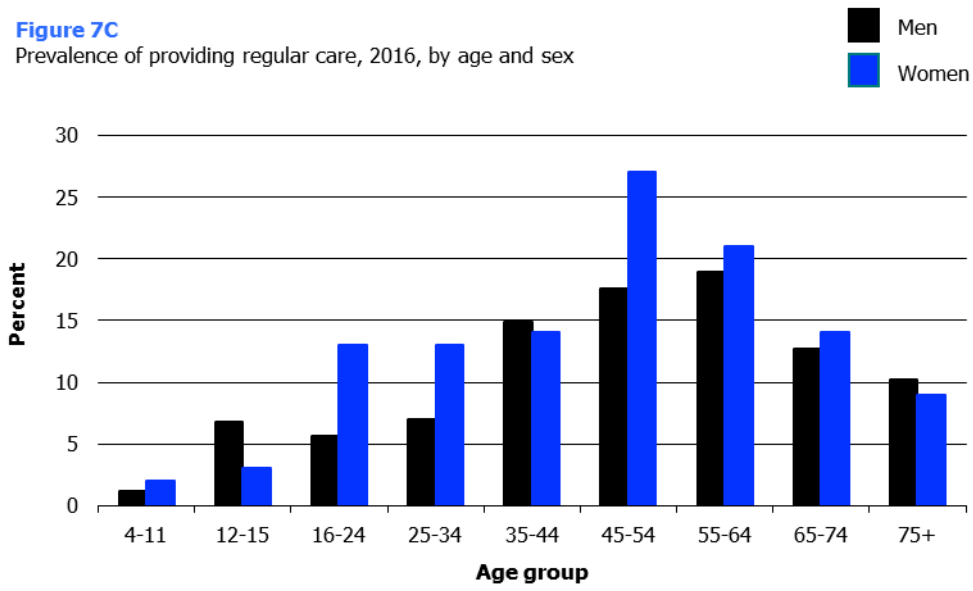
Children

In 2016 a small proportion (3%) of children aged 4-15 were providing regular, unpaid care to a family member, friend or someone else. In contrast with adult caring rates, there was little difference by sex (3% of boys, compared with 2% of girls providing care overall).

As shown in Figure 7C, older children were much more likely to provide unpaid care than their younger counterparts (5% of those aged 12-15 compared with 1% of those aged 4-11).

The proportion of boys caring varied significantly by age, with boys aged 12-15 being the mostly likely to provide care (7%). The difference between caring prevalence and age for girls was not significant (2% among girls aged 4-11 and 3% among girls aged 12-15 providing care). **Figure 7C, Table 7.4**

Figure 7C
Prevalence of providing regular care, 2016, by age and sex



7.5.2 Unpaid caring prevalence in 2016, by area deprivation and sex

There was no significant difference between rates of caring in the most and least deprived areas. Age standardised results showed that 14% of adults in the least deprived quintile were providing care in 2016, compared with 15% of adults in the most deprived quintile. This overall finding was true for both men and women. **Table 7.5**

7.5.3 Unpaid caring prevalence in 2016, by employment status and sex

Adults working full time were significantly less likely to provide unpaid care (14%) than adults of the same age who were not working (19%) or working part time (18%). Women working full time were significantly more likely than men working full time to provide unpaid, regular care (17% of women, compared with 12% of men). **Table 7.6**

7.5.4 Hours spent caring in 2015/2016 combined, by age and sex

The majority of carers reported spending less than 19 hours a week on their caring responsibilities. Adult carers were most likely to spend between 5 and 19 hours a week (34%) or below 5 hours a week (31%) providing help or unpaid care. Just 1 in 7 (15%) carers were providing care for 50+ hours per week. Only 4% of adults providing care did so for 35-49 hours per week.

There were some significant differences between age groups in the hours of care that they provided. Carers aged 65+ were the most likely to provide care in excess of 50 hours a week (24% did so, compared with 14% of those aged 16-44 and 13% for those aged 45-64). This

pattern was more pronounced for men, with 33% of male carers aged 65 and over providing care for 50 or more hours a week, compared with 17% of female carers in the same age group.

Younger adults were more likely than older adults to provide up to 4 hours of help or unpaid care (36% of carers aged 16-44 compared with 25% of carers aged 65 and over).

The proportion of those providing the most common amount of care (5-19 hours) also varied significantly by age with those aged 45-64 being most likely to do so (39%) compared with 31% of carers aged 16-44, and 27% of those aged 65+. **Table 7.7**

References and notes

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[16] *Getting it Right for Young Carers: The Young Carer's Strategy for Scotland: 2010-2015*. Scottish Government, 2010. Available from: www.scotland.gov.uk/Publications/2010/08/16095043/0

[17] See: www.gov.scot/scottishhealthsurvey

[18] Please note that these figures are rounded

Table list

Table 7.1 Adult self-assessed general health, 2016, by age and sex

Aged 16 and over *2016*

Self-assessed general health	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Very good	38	35	41	28	27	18	17	30
Good	51	46	41	45	38	40	39	43
Fair	8	16	13	17	23	31	28	19
Bad	3	1	4	7	10	9	14	6
Very bad	-	1	2	3	2	1	2	2
Good / Very good	*89*	*82*	*82*	*73*	*65*	*58*	*56*	*74*
Bad / Very bad	*3*	*2*	*5*	*10*	*13*	*11*	*16*	*8*
Women								
Very good	37	38	38	32	32	26	19	32
Good	51	42	37	44	37	40	31	41
Fair	10	17	18	15	20	21	31	18
Bad	2	4	4	7	9	9	14	7
Very bad	1	-	3	3	2	4	4	3
Good / Very good	*88*	*80*	*75*	*75*	*69*	*66*	*50*	*73*
Bad / Very bad	*3*	*4*	*7*	*10*	*11*	*13*	*19*	*9*
All adults								
Very good	38	37	39	30	29	22	18	31
Good	51	44	39	44	38	40	34	42
Fair	9	17	15	16	21	26	30	18
Bad	2	2	4	7	9	9	14	6
Very bad	0	1	2	3	2	3	3	2
Good / Very good	*88*	*81*	*78*	*74*	*67*	*62*	*52*	*73*
Bad / Very bad	*3*	*3*	*6*	*10*	*12*	*12*	*18*	*9*
Bases (weighted):								
Men	*289*	*338*	*320*	*382*	*326*	*255*	*167*	*2077*
Women	*283*	*353*	*338*	*407*	*344*	*281*	*238*	*2245*
All adults	*572*	*691*	*658*	*790*	*670*	*536*	*404*	*4322*
Bases (unweighted):								
Men	*169*	*213*	*265*	*342*	*360*	*337*	*208*	*1894*
Women	*198*	*325*	*347*	*440*	*433*	*400*	*285*	*2428*
All adults	*367*	*538*	*612*	*782*	*793*	*737*	*493*	*4322*

Table 7.2 Child self-assessed general health, 2015/2016 combined, by age and sex

Aged 0 - 15 *2015/2016 combined*

Self-assessed general health	Age								Total
	0-1	2-3	4-5	6-7	8-9	10-11	12-13	14-15	
	%	%	%	%	%	%	%	%	%
Boys									
Very good	69	61	68	67	67	71	60	56	65
Good	27	30	27	26	29	27	33	33	29
Fair	3	8	2	6	4	2	6	9	5
Bad	0	1	3	0	1	-	-	1	1
Very Bad	0	0	-	-	-	-	-	1	0
Good / Very good	*96*	*91*	*95*	*94*	*95*	*98*	*94*	*89*	*94*
Bad / Very bad	*1*	*1*	*3*	*0*	*1*	*-*	*-*	*1*	*1*
Girls									
Very good	74	69	71	77	75	72	66	47	69
Good	25	29	27	21	20	26	29	46	28
Fair	1	3	1	1	4	1	4	5	2
Bad	1	-	0	-	2	1	-	2	1
Very Bad	-	-	-	1	-	-	-	-	0
Good / Very good	*98*	*97*	*98*	*98*	*95*	*98*	*96*	*93*	*97*
Bad / Very bad	*1*	*-*	*0*	*1*	*2*	*1*	*-*	*2*	*1*
All children									
Very good	71	65	69	72	70	72	63	51	67
Good	26	29	27	24	25	26	31	40	28
Fair	2	5	2	4	4	2	5	7	4
Bad	0	0	2	0	1	1	-	1	1
Very Bad	0	0	-	0	-	-	-	0	0
Good / Very good	*97*	*95*	*97*	*96*	*95*	*98*	*95*	*91*	*95*
Bad / Very bad	*1*	*0*	*2*	*1*	*1*	*1*	*-*	*2*	*1*
Bases (weighted):									
Boys	*193*	*174*	*196*	*201*	*197*	*210*	*180*	*163*	*1513*
Girls	*157*	*207*	*207*	*187*	*170*	*187*	*183*	*171*	*1468*
All children	*349*	*381*	*403*	*388*	*367*	*398*	*362*	*334*	*2981*
Bases (unweighted):									
Boys	*205*	*190*	*204*	*203*	*199*	*193*	*162*	*150*	*1506*
Girls	*183*	*220*	*216*	*196*	*168*	*166*	*163*	*163*	*1475*
All children	*388*	*410*	*420*	*399*	*367*	*359*	*325*	*313*	*2981*

Table 7.3 Prevalence of long-term conditions in adults and children, 2016, by age and sex

All ages *2016*

Long-term conditions and limiting long-term conditions	Age								Total 16+
	0-15	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%	%
Males									
No long-term conditions	82	74	72	70	56	46	33	21	56
Limiting long-term conditions	9	17	19	19	32	36	45	60	30
Non-limiting long-term conditions	9	9	9	11	12	19	23	19	14
Total with conditions	*18*	*26*	*28*	*30*	*44*	*54*	*67*	*79*	*44*
Females									
No long-term conditions	86	67	67	58	55	40	33	24	51
Limiting long-term conditions	6	25	21	27	33	39	46	60	35
Non-limiting long-term conditions	8	8	12	15	11	20	21	16	15
Total with conditions	*14*	*33*	*33*	*42*	*45*	*60*	*67*	*76*	*49*
All adults									
No long-term conditions	84	71	69	64	55	43	33	23	53
Limiting long-term conditions	7	21	20	23	33	38	45	60	33
Non-limiting long-term conditions	8	8	11	13	12	19	22	17	14
Total with conditions	*16*	*29*	*31*	*36*	*45*	*57*	*67*	*77*	*47*
Bases (weighted):									
Males	*798*	*289*	*338*	*320*	*382*	*326*	*254*	*167*	*2076*
Females	*763*	*283*	*353*	*338*	*407*	*342*	*280*	*238*	*2242*
All	*1561*	*572*	*691*	*658*	*790*	*668*	*534*	*404*	*4318*
Bases (unweighted):									
Males	*771*	*169*	*213*	*265*	*342*	*360*	*336*	*208*	*1893*
Females	*790*	*198*	*325*	*347*	*440*	*431*	*399*	*285*	*2425*
All	*1561*	*367*	*538*	*612*	*782*	*791*	*735*	*493*	*4318*

Table 7.4 Caring prevalence, 2016, by age and sex

Aged 4 and over *2016*

Regular carer	Age		Total 4-15								Total 16+
	4-11	12-15		16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%	%	%	%
Males											
Provides regular care	1	7	3	6	7	15	18	19	13	10	13
Females											
Provides regular care	2	3	2	13	13	14	27	21	14	9	17
All											
Provides regular care	1	5	3	9	10	15	23	20	13	9	15
Bases (weighted):											
Males	*409*	*181*	*590*	*289*	*338*	*320*	*382*	*326*	*255*	*167*	*2077*
Females	*402*	*168*	*570*	*283*	*354*	*338*	*407*	*344*	*281*	*238*	*2246*
All	*811*	*349*	*1160*	*572*	*692*	*658*	*790*	*670*	*536*	*404*	*4323*
Bases (unweighted):											
Males	*406*	*164*	*570*	*169*	*213*	*265*	*342*	*360*	*337*	*208*	*1894*
Females	*402*	*163*	*565*	*198*	*326*	*347*	*440*	*433*	*400*	*285*	*2429*
All	*808*	*327*	*1135*	*367*	*539*	*612*	*782*	*793*	*737*	*493*	*4323*

Table 7.5 Caring prevalence (age-standardised), 2016, by area deprivation and sex

Aged 16 and over *2016*

Regular carer	Scottish Index of Multiple Deprivation				
	5th (Least deprived)	4th	3rd	2nd	1st (Most deprived)
	%	%	%	%	%
Men					
Provides regular care	13	12	12	13	14
Women					
Provides regular care	14	17	18	18	16
All adults					
Provides regular care	14	15	15	16	15
Bases (weighted):					
Men	*444*	*386*	*446*	*389*	*413*
Women	*474*	*385*	*458*	*430*	*498*
All adults	*918*	*771*	*904*	*818*	*911*
Bases (unweighted):					
Men	*422*	*421*	*430*	*327*	*294*
Women	*512*	*505*	*553*	*438*	*421*
All adults	*934*	*926*	*983*	*765*	*715*

Table 7.6 Caring prevalence (age-standardised), 2016, by employment status and sex

Aged 16 - 64 *2016*

Regular carer	Employment status		
	Working full-time[a]	Working part-time[b]	Not working[c]
	%	%	%
Men			
Provides regular care	12	16	18
Women			
Provides regular care	17	19	20
All adults			
Provides regular care	14	18	19
Bases (weighted):			
Men	*859*	*139*	*317*
Women	*524*	*396*	*401*
All adults	*1383*	*535*	*718*
Bases (unweighted):			
Men	*892*	*126*	*328*
Women	*675*	*543*	*521*
All adults	*1567*	*669*	*849*

a working full time – doing at least one of the following for more than 30 hours: working as an employee (or temporarily away), On a Government sponsored training scheme (or temporarily away), Self employed or freelance (or temporarily away), Working unpaid for your own family's business (or temporarily away), Doing any other kind of paid work

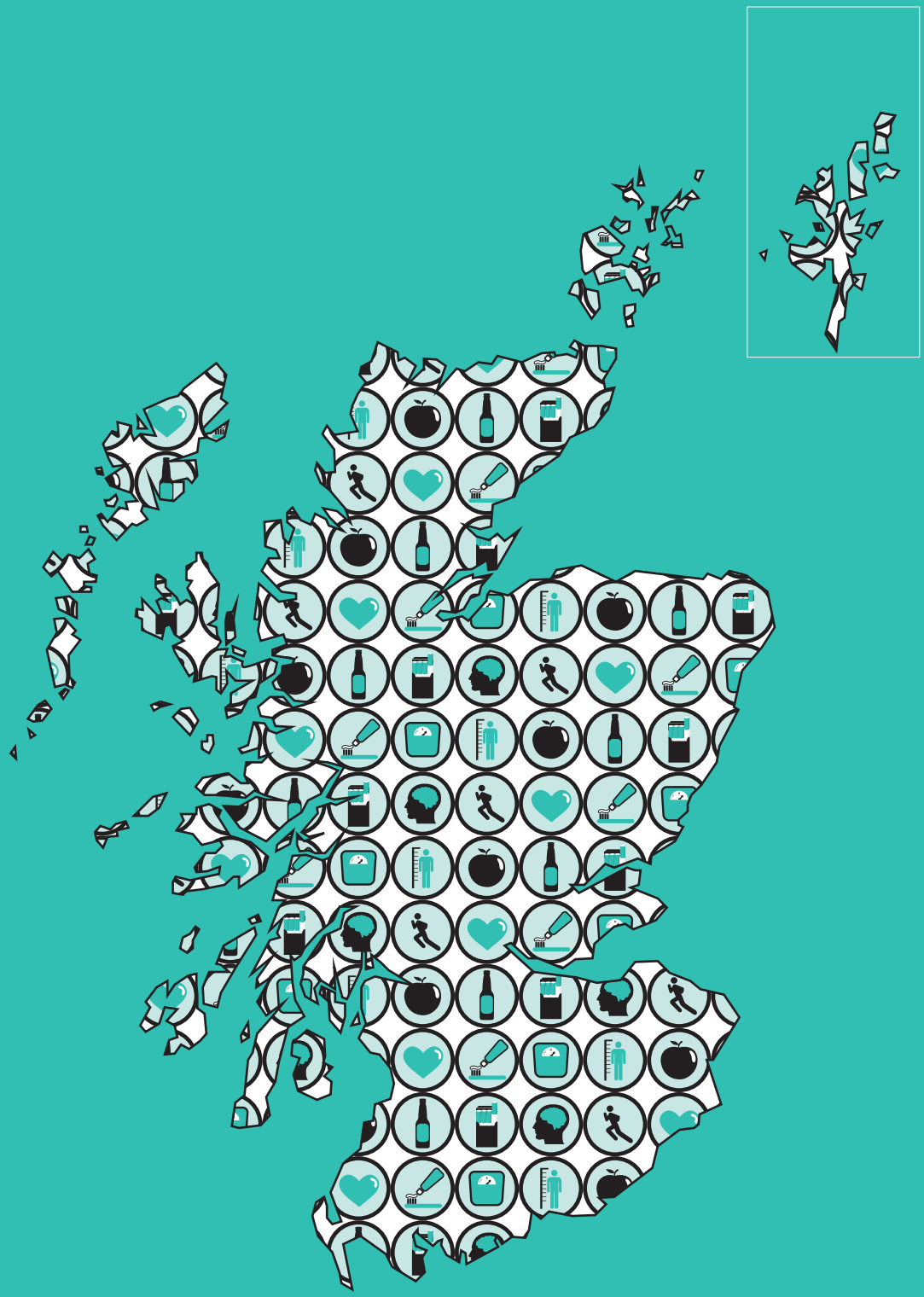
b working part time – doing any of the above for less than 30 hours

c not working - not doing any of the above

Table 7.7 Hours spent each week providing help or unpaid care, 2015/2016 combined, by age and sex

Aged 16 and over *2015/2016 combined*

Regular carer	Age			Total 16+
	16 – 44	45 - 64	65+	
	%	%	%	%
Men				
Up to 4 hours a week	34	36	23	33
5-19 hours a week	27	37	23	31
20-34 hours a week	8	8	8	8
35-49 hours a week	6	3	4	4
50+ hours a week	17	12	33	18
Varies	8	4	10	6
Women				
Up to 4 hours a week	36	27	27	30
5-19 hours a week	34	40	31	36
20-34 hours a week	10	11	11	10
35-49 hours a week	3	4	4	4
50+ hours a week	12	13	17	14
Varies	5	5	10	6
All adults				
Up to 4 hours a week	36	30	25	31
5-19 hours a week	31	39	27	34
20-34 hours a week	9	10	10	9
35-49 hours a week	4	3	4	4
50+ hours a week	14	13	24	15
Varies	6	5	10	6
Bases (weighted):				
Men	*168*	*245*	*100*	*513*
Women	*249*	*409*	*139*	*797*
All adults	*417*	*654*	*240*	*1311*
Bases (unweighted):				
Men	*122*	*245*	*142*	*509*
Women	*227*	*450*	*186*	*863*
All adults	*349*	*695*	*328*	*1372*



Chapter 8

Mental Health and Wellbeing

SUMMARY

- Average levels of wellbeing for adults, as measured by the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS), have remained stable since 2008, with scores ranging from 49.7 to 50.0 (49.8 in 2016).
- Reported mental wellbeing varied significantly by age with the highest mean WEMWEBS score reported for those aged 65-74 (50.8) and the lowest for those aged 45-54 (49.0).

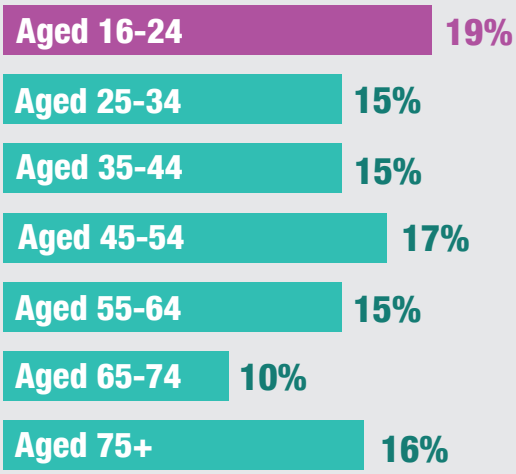
17% of women, and

13% of men

exhibited signs of a possible psychiatric disorder

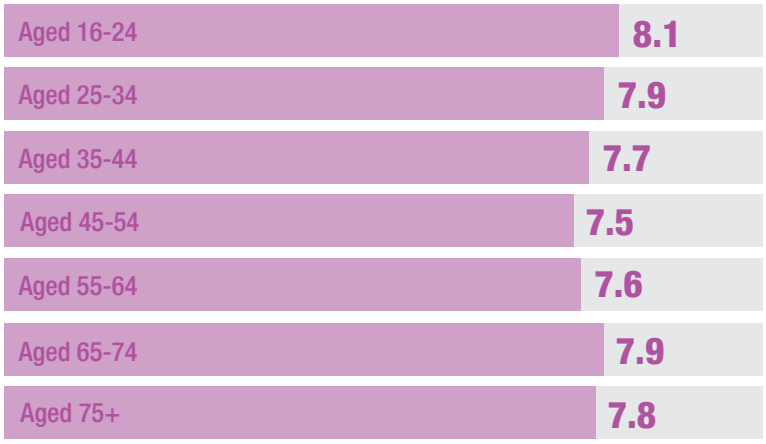
- In 2016, 15% of adults exhibited signs of a possible psychiatric disorder (GHQ-12 score of four or more), the proportion remaining relatively static since 2003.
- Ex-drinkers were most likely to have symptoms of a possible psychiatric disorder (28%), followed by non-drinkers (20%) and those drinking over 35 units per week (18%); those drinking within the recommended maximum of 14 units a week and those drinking between 14 and 35 units a week were the least likely (14% and 11% respectively).

Young adults were most likely to report signs of a possible disorder



- The mean life satisfaction score for adults was 7.8 in 2016 (on a scale of 0-10).
- Adults aged 65-74 had the highest percentage of ***above*** average reported life satisfaction (41%), whilst those aged 45-54 had the highest percentage of ***below*** average life satisfaction (39%).

Mean life satisfaction score by age group



- Adults living in the most deprived areas reported lower life satisfaction and lower mental wellbeing than those in the least deprived areas (mean life satisfaction score was 7.3 in the most deprived areas, compared with 8.1 in the least; mean WEMWEBS scores were 47.4 in the most deprived areas, compared with 51.5 in the least).

8 MENTAL HEALTH AND WELLBEING

Alice Calder

8.1 INTRODUCTION

This chapter looks at the mental health and wellbeing of adults in Scotland. Mental wellbeing, together with physical and social wellbeing, is a central aspect of overall wellbeing. It is important as an indicator of quality of life. Like many of the other topics covered in this report, mental wellbeing is a critical measure of the population's overall health status and a key marker of health inequalities[1].

The World Health Organisation (WHO) considers mental wellbeing to be fundamental to their definition of health[2]. Mental disorders often co-exist with other diseases, including cancers and cardiovascular disease[3], and many of the risk factors covered in this report, such as obesity, excessive alcohol consumption, and low levels of physical activity, are common to both mental disorders and other non-communicable diseases, with outcomes being critically interdependent.

Mental disorder represents a significant public health challenge globally. Adolescence and early adulthood is the peak age of onset for mental ill-health and the period when initial care is required[4]. Those with mental disorders have disproportionately higher disability and mortality than the general population, dying on average more than 10 years earlier[5]. Neuropsychiatric disorders are the second largest contributor to the burden of disease in Europe and mental disorders account for around 40% of all years lived with disability[5]. Accounting for 4.3% of the global burden of disease, depression is now the largest single cause of disability worldwide (11% of all years lived with disability globally) and is the leading chronic condition in Europe[2]. Mental health is affected by the same inequalities as physical health and is strongly associated with poverty and social exclusion[6]. Globally, depression is more prevalent among women than men[2] as well as marginalised groups[7].

8.1.1 Policy background

In March 2017 the Scottish Government published a new 10 year Mental Health Strategy: 2017-2027[5]. The new strategy is one of many measures to help create a Fairer Scotland[8]. The guiding ambition for this new strategy is parity of esteem, that is, to prevent and treat mental health problems with the same commitment, passion and drive as is given to physical health problems. In recognition of the evidence of the personal and societal costs of failing to prioritise mental health and wellbeing, the strategy is focussed on prevention, early intervention and physical wellbeing, equal access to safe and effective treatment and joined up accessible services. Addressing higher mortality and smoking rates amongst those who experience mental illness is a priority as well as improving their access to physical health care. Additional themes in the Strategy include ensuring protection and promotion of rights, better information use and planning. The importance of improving measurement of outcomes in mental health is emphasised, to include

not just data on service activity but also on effect and the experience for people.

The strategy contains 40 initial actions including additional funding to increase the mental health workforce across a wide range of settings, these include:

- Improving out of hours and urgent access to mental health care and treatment.
- Evaluating primary care transformation projects that are exploring new models of multi-disciplinary primary care mental health delivery.
- Evaluating Distress Brief Interventions.

Underpinning these actions is a commitment to tackle mental health inequalities and embed a human-rights based approach across services with high aspirations for service users.

There is also emphasis on improving support and services for children and young people, including those who come into contact with the criminal justice system. The Scottish Youth Parliament campaign for 2016 'Speak Your Mind' highlighted the importance of mental wellbeing as a policy priority for young people in Scotland[9].

A range of government departments (including poverty, education, justice, social security and employment) are expected to support the implementation of the strategy and a bi-annual forum of mental health stakeholders will help steer implementation. A measurement framework will be developed to track progress towards parity and illustrate broader population mental health. A quality indicator profile will gather data balanced across the quality dimensions to illustrate service delivery. It is intended that the roll out of this framework and profile will occur in a phased way over 3 years with the parallel retiring of data collection and reporting that is made redundant by the process. SHeS will contribute to these developments.

The 2017-2027 strategy builds upon a number of key policy documents including the **Mental Health Strategy for Scotland: 2012-2015**[5], which promoted more person-centred and effective mental health services, emphasising self-management and community support. This was preceded by **Towards a Mentally Flourishing Scotland**[10], (2009-2011), and **Delivering for Mental Health**[11] (published in 2006) where the aim was to promote mental wellbeing for the public and those experiencing mental health problems alongside reducing the prevalence of common mental health problems, suicide and self-harm.

One of the Scottish Government's National Outcomes is the overall strategic objective for health: We live longer, healthier lives[12]. This is supported by a number of National Indicators including **'improve mental wellbeing'**[12] which is monitored using data from the Scottish Health Survey (SHeS). The purpose target to improve healthy life

expectancy over the 2007 to 2017 period uses SHeS data in the calculations used to measure progress. Given that those with mental disorders die, on average, earlier than the general population, mental health impacts on another National Indicator; to 'reduce premature mortality'. Scotland also has a set of national, sustainable mental health indicators for adults and children, covering both outcomes and contextual factors that confer increased risks of, or protection from, poor mental health outcomes[13]. SHeS is the data source for 28 of the 54 indicators for adults[14] and over 20 of the indicators for children[15].

There were NHS Scotland HEAT targets for specialist Child and Adolescent Mental Health Services (CAMHS), and for access to Psychological Therapies (across all ages in the population), to achieve 18 week maximum referral to treatment times[16]. In January 2015, the targets became standards in NHS Scotland Local Delivery Plans[17].

Figures for the quarter ending March 2017 show that the target was met for 84% of referrals of children and young people[18]. Around 74% of patients (across all ages) starting a psychological therapy met the target during the quarter ending March 2016 [19]. The Scottish Government has announced additional funding to continue to improve mental health across Scotland and ensure that people get timely access to services.

8.1.2 Reporting on mental wellbeing in the Scottish Health Survey (SHeS)

This chapter updates trends in mental health and wellbeing for adults. Figures are also reported by age and sex and area deprivation. Age-standardised GHQ-12 scores are reported by levels of alcohol consumption.

The area deprivation data are presented in Scottish Index of Multiple Deprivation (SIMD) quintiles. To ensure that the comparisons presented are not confounded by the different age profiles of the quintiles, the data have been age-standardised. Readers should refer to the Glossary at the end of this Volume for a detailed description of both SIMD and age-standardisation.

Supplementary tables on mental wellbeing are also published on the Scottish Health Survey website[20].

8.2 METHODS AND DEFINITIONS

8.2.1 Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS)

Wellbeing is measured using the WEMWBS questionnaire. It has 14 items designed to assess: positive affect (optimism, cheerfulness, relaxation) and satisfying interpersonal relationships and positive functioning (energy, clear thinking, self-acceptance, personal development, mastery and autonomy) [21]. The scale uses positively worded statements with a five-item scale ranging from '1 - none of the

time' to '5 - all of the time'. The lowest score possible is therefore 14 and the highest score possible is 70; the tables present mean scores.

The scale was not designed to identify individuals with exceptionally high or low levels of positive mental health so cut off points have not been developed[22]. The scale was designed for use in English speaking populations, however in a very small number of cases the questions were translated to enable the participation of people who did not speak English[23].

WEMWBS is used to monitor the National Indicator '**improve mental wellbeing**'[12]. It is also part of the Scottish Government's adult mental health indicator set, and the mean score for parents of children aged 15 years and under on WEMWBS is included in the mental health indicator set for children[13].

8.2.2 General Health Questionnaire 12 (GHQ 12)

GHQ-12[24] is a widely used standard measure of mental distress and mental ill-health consisting of 12 questions on concentration abilities, sleeping patterns, self-esteem, stress, despair, depression, and confidence in the previous few weeks. Responses to each of the GHQ-12 items are scored, with one point allocated each time a particular feeling or type of behaviour is reported to have been experienced 'more than usual' or 'much more than usual' over the previous few weeks.

These scores are combined to create an overall score of between zero and twelve. A score of four or more (referred to as a high GHQ-12 score) has been used here to indicate the presence of a possible psychiatric disorder. A score of zero on the GHQ-12 questionnaire can, in contrast, be considered to be an indicator of psychological wellbeing. GHQ-12 measures deviations from people's usual functioning in the previous few weeks and therefore cannot be used to detect chronic conditions.

8.2.3 Life satisfaction

Life satisfaction is measured by asking participants to rate, on a scale of 0 to 10, how satisfied they are with their life in general. On the scale, 0 represented 'extremely dissatisfied' and 10 'extremely satisfied' (the intervening scale points were numbered but not labelled). This measure has been used in numerous international surveys. There are no pre-defined cut-off points within the scale to distinguish between different levels of satisfaction. However, a summary measure was used in this analysis which identified three groups of interest based on the overall distribution of scores in the whole population: people with the highest levels of satisfaction (scores of 9 or 10), people with an average satisfaction level (score 8), and those with below average scores (0-7).

8.3 WARWICK-EDINBURGH MENTAL WELLBEING SCALE (WEMWBS)

8.3.1 Trends in adult WEMWBS mean scores since 2008

WEMWBS mean scores for all adults aged 16 and over have remained relatively stable since 2008, with scores ranging from 49.7 to 50.0 (49.8 in 2016).

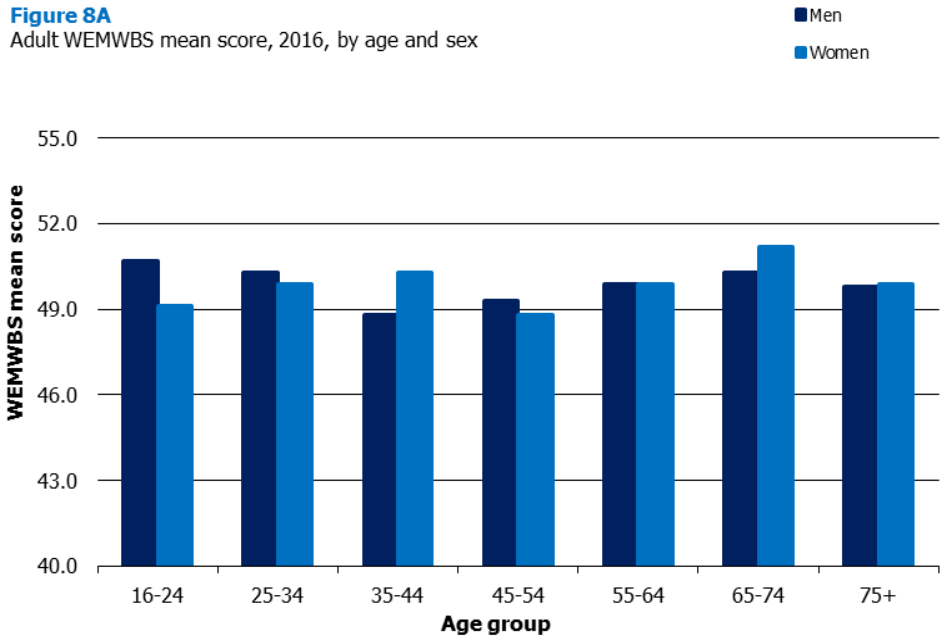
WEMWBS mean scores have not significantly varied between men and women since 2008, with the mean score in 2016 for both sexes being 49.8. **Table 8.1**

8.3.2 Adult WEMWBS mean scores in 2016, by age and sex

For all adults, the WEMWBS mean score varied significantly by age with the highest score for those aged 65-74 (50.8) and the lowest for those aged 45-54 (49.0).

Levels of wellbeing differed by age for women with the lowest WEMWBS mean score amongst those aged 45-54 (48.8) and the second lowest score being for those aged 16-24 (49.1). This represents a significant change from 2015 when women aged 16-24 had the lowest WEMWEBS mean score at 47.9. In 2016, the highest mean score for women was amongst those aged 65-74 (51.2). There was no significant variation across the age groups for men. **Figure 8A, Table 8.2**

Figure 8A
Adult WEMWBS mean score, 2016, by age and sex

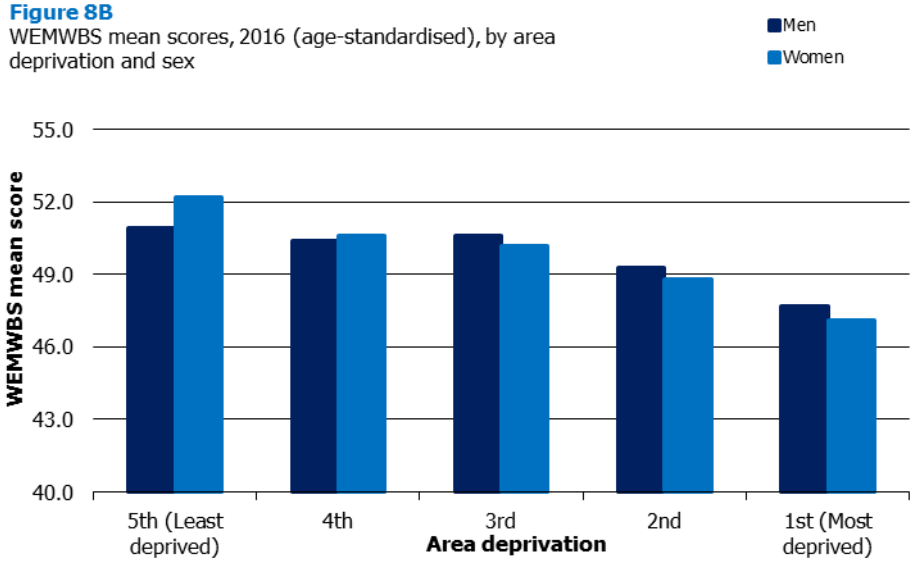


8.3.3 WEMWBS mean scores in 2016, by area deprivation and sex

As area deprivation increased, the age-standardised WEMWBS mean score decreased. Among adults, the mean age-standardised WEMWBS score for the least deprived areas was 51.5 compared with the most deprived areas with a mean score of 47.4. A similar pattern was seen for both men and women. For women the mean scores ranged from 47.1-52.2 and for men the mean scores ranged from 47.7-50.9.

Figure 8B, Table 8.3

Figure 8B
WEMWBS mean scores, 2016 (age-standardised), by area deprivation and sex



8.4 GENERAL HEALTH QUESTIONNAIRE 12

8.4.1 Trends in GHQ-12 scores since 2003

For all adults, GHQ-12 scores remained relatively static between 2003 and 2016. In 2016, 15% of adults (16 and over) had a GHQ-12 score of four or more (indicating a possible psychiatric disorder). In 2016, 61% of adults reported a GHQ-12 score of zero (indicating good psychological wellbeing with no symptoms of mental distress evident).

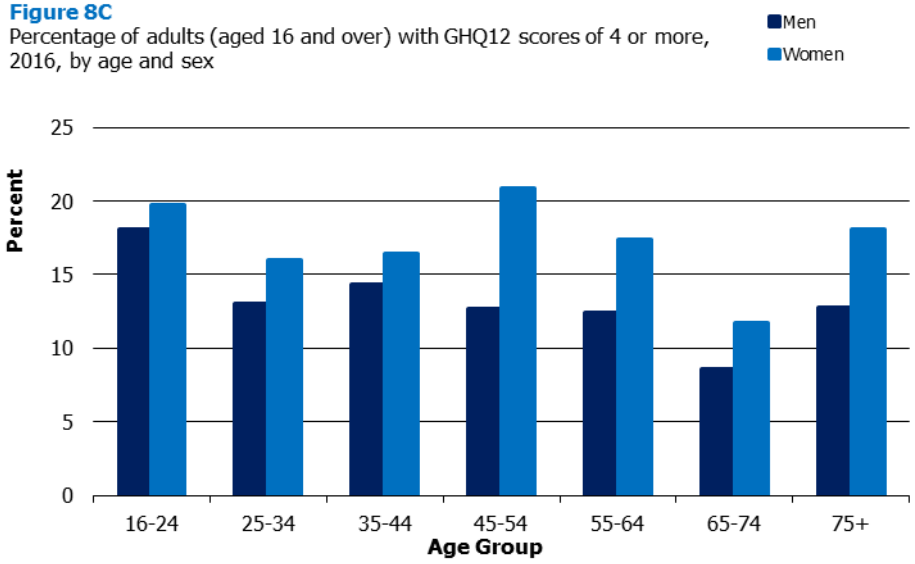
More men (65%) had GHQ-12 scores of zero, than women (58%) in 2016. This is typical of the pattern since 2003, where a consistently higher proportion of men than women had GHQ-12 scores of zero. Correspondingly, from 2003 to 2016, women were significantly more likely than men to have a GHQ-12 score of 4 or more. In 2016, 17% of women reported symptoms of a possible psychiatric disorder (GHQ-12 score of 4 or more), compared with 13% of men. **Table 8.4**

8.4.2 GHQ-12 scores in 2016, by age and sex

GHQ-12 scores differed significantly by age. In 2016, the highest percentage (19%) of GHQ-12 scores of four or more was found among adults in the 16-24 age group. In contrast, the 65-74 age group had the lowest percentage of adults with GHQ-12 scores of four or more (10%) and the highest percentage with a GHQ-12 score of zero (69%). Similar patterns were found for both men and women.

Overall a higher percentage of women than men had a GHQ-12 score of four or more (17% compared with 13%); rates were higher for women across all age groups, see Figure 8C. For women, the highest percentage with GHQ-12 scores of four or more was found among those aged 45-54 (21%), closely followed by the those aged 16-24 (20%). For men, the highest percentage with GHQ-12 scores of four or more was found among those aged 16-24 (18%). **Figure 8C, Table 8.5**

Figure 8C
Percentage of adults (aged 16 and over) with GHQ12 scores of 4 or more, 2016, by age and sex



8.4.3 GHQ-12 scores (age standardized), 2013-2016 combined, by alcohol consumption and sex

For the purposes of Table 8.6, alcohol consumption has been categorised as follows: non-drinker (no alcohol units per week); ex-drinker (no longer drink alcohol); moderate (>0 units and up to 14 units); hazardous (>14 units and up to 35 units); harmful (> 35 units).

Of all adults, those self-reporting as ex-drinkers were the most likely to have a GHQ-12 score of four or more (28%), followed by non-drinkers (20%) and those drinking at a harmful level (18%). Moderate and hazardous drinkers were the least likely to have a GHQ-12 score or more (14% and 11% respectively). . The same pattern was found for both men and women, although the differences between drinking categories were more pronounced for women than for men.

Those drinking at a hazardous level were more likely than those in any other drinking category to report a GHQ-12 score of zero (67%) whilst ex-drinkers had the lowest percentage of GHQ-12 scores of zero (45%). A similar pattern was found among both men and women.

These data should be interpreted with caution. The patterns do not indicate a causal relationship between the amount of alcohol consumed and mental health and merit further exploration. In particular, the reasons for non-drinking and ex-drinking behaviour should be explored as some may be related to ill health, implying reverse causality which

could occur when people stop drinking after developing symptoms of a psychiatric or other disorder. **Table 8.6**

8.5 LIFE SATISFACTION

8.5.1 Life satisfaction scores in 2016, by age and sex

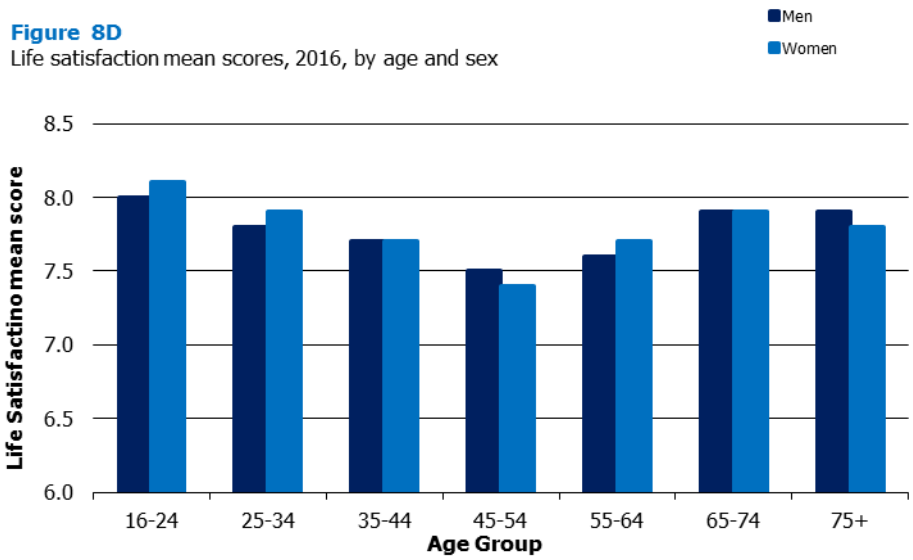
The average mean life satisfaction score for adults was 7.8, remaining unchanged since last reported in 2014. There was no significant difference in mean life satisfaction between men and women.

In 2016 approximately a third of all adults fell into each of the following life satisfaction categories: 34% reported the highest level of life satisfaction (scores of 9 or 10), 33% reported average life satisfaction (score 8), and 34% reported below average life satisfaction (scores of 0-7). Overall more women reported an above average life satisfaction than men (35% compared to 32%).

Mean life satisfaction scores were highest for those aged 16-24 (8.1) and lowest among those aged 45 to 54 (7.5) rising to 7.8-7.9 for those aged 65 and over. Similar patterns were found for men and women, see figure 8.D.

Those aged 45-54 also had the highest percentage of adults with below average life satisfaction scores (39%). The 65-74 age group had the highest percentage of adults reporting an above average life satisfaction (41%), closely followed by the youngest and oldest age groups (37% among those aged 16-24 and 36% for those aged 75 and over). **Figure 8D, Table 8.7**

Figure 8D
Life satisfaction mean scores, 2016, by age and sex



8.5.2 Life satisfaction scores in 2016, by area deprivation and sex

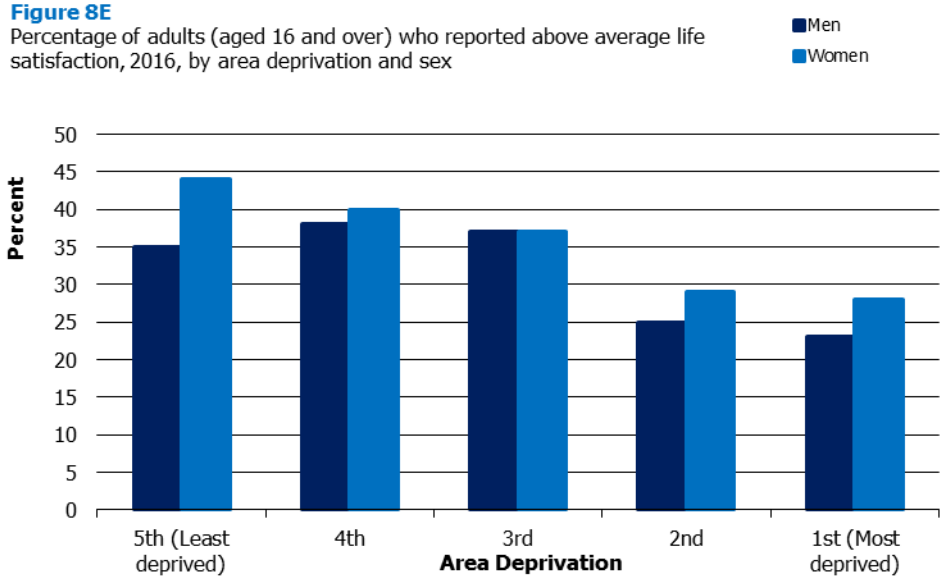
There was a clear social gradient in life satisfaction; people in the most deprived areas tended to have a lower life satisfaction than those in the

least deprived areas (age-standardised mean life-satisfaction scores of 7.3 and 8.1 respectively in 2016). The same pattern was found for life satisfaction categories. A higher proportion of adults in the least deprived areas reported an above average life satisfaction (40%) compared with adults in the most deprived areas (26%). Similar patterns were found for both men and women.

As shown in Figure 8E, women in the least deprived areas had a higher level of above average life satisfaction than men (44% vs 35%).

Figure 8E, Table 8.8

Figure 8E
Percentage of adults (aged 16 and over) who reported above average life satisfaction, 2016, by area deprivation and sex



References and notes

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[23] The translation was carried out solely to ensure that speakers of other languages were not excluded from the Scottish Health Survey. There were insufficient numbers of non-English speaking people in the sample to enable comparisons of their health with the rest of the population. As the primary intention was to prevent the exclusion of people due to language barriers, the translated WEMWBS questions were not subject to the full extent of validation that would need to take place if the questionnaire was being used to assess wellbeing in a whole population of non-English speakers. It is therefore possible that the translated WEMWBS scale (and other questions in the survey) is not directly comparable to the English version. However, the number of interviews that used translated materials was judged to be too small to affect the national estimates presented here so all cases have been included in the analysis.

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Table list

Table 8.1 Adult WEMWBS mean scores, 2008 to 2016

Aged 16 and over *2008 - 2016*

WEMWBS scores[a]	2008	2009	2010	2011	2012	2013	2014	2015	2016
Men									
Mean	50.2	49.9	50.2	50.2	50.4	50.3	50.1	49.9	49.8
SE of the mean	0.20	0.16	0.19	0.19	0.24	0.25	0.25	0.25	0.25
Standard deviation	8.55	8.02	8.37	8.35	8.34	8.56	8.49	8.40	8.44
Women									
Mean	49.7	49.7	49.6	49.7	49.4	49.7	49.9	49.9	49.8
SE of the mean	0.16	0.16	0.17	0.17	0.22	0.21	0.22	0.22	0.24
Standard deviation	8.48	8.51	8.67	8.37	8.63	8.72	8.47	8.69	8.77
All adults									
Mean	50.0	49.7	49.9	49.9	49.9	50.0	50.0	49.9	49.8
SE of the mean	0.14	0.12	0.14	0.14	0.18	0.17	0.18	0.19	0.18
Standard deviation	8.52	8.28	8.54	8.36	8.50	8.65	8.48	8.55	8.61
Bases (weighted):									
Men	*2785*	*3282*	*3171*	*3191*	*2063*	*2110*	*2001*	*2117*	*1859*
Women	*3026*	*3586*	*3478*	*3540*	*2256*	*2351*	*2204*	*2326*	*2023*
All adults	*5812*	*6868*	*6649*	*6731*	*4319*	*4461*	*4205*	*4443*	*3882*
Bases (unweighted):									
Men	*2539*	*2994*	*2842*	*2900*	*1909*	*1938*	*1851*	*1961*	*1708*
Women	*3248*	*3886*	*3805*	*3845*	*2431*	*2561*	*2369*	*2452*	*2192*
All adults	*5787*	*6880*	*6647*	*6745*	*4340*	*4499*	*4220*	*4413*	*3900*

a WEMWBS scores range from 14 to 70. Higher scores indicate greater wellbeing. Mean WEMWBS score is part of the national mental health indicator set for adults

Table 8.2 Adult WEMWBS mean scores, 2016, by age and sex

Aged 16 and over *2016*

WEMWBS scores[a]	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
Men								
Mean	50.7	50.3	48.8	49.3	49.9	50.3	49.8	49.8
SE of the mean	0.68	0.65	0.61	0.56	0.56	0.49	0.79	0.25
Standard deviation	7.76	7.16	8.37	8.97	8.99	8.29	9.83	8.44
Women								
Mean	49.1	49.9	50.3	48.8	49.9	51.2	49.9	49.8
SE of the mean	0.91	0.55	0.56	0.50	0.50	0.49	0.57	0.24
Standard deviation	9.35	8.32	8.61	8.94	9.01	8.49	8.27	8.77
All Adults								
Mean	49.9	50.1	49.6	49.0	49.9	50.8	49.8	49.8
SE of the mean	0.63	0.44	0.46	0.38	0.38	0.38	0.51	0.18
Standard deviation	8.63	7.77	8.52	8.95	8.99	8.40	8.96	8.61
Bases (weighted):								
Men	*260*	*304*	*301*	*322*	*297*	*229*	*146*	*1859*
Women	*265*	*318*	*301*	*375*	*316*	*256*	*193*	*2023*
All adults	*525*	*622*	*602*	*697*	*614*	*485*	*338*	*3882*
Bases (unweighted):								
Men	*154*	*197*	*248*	*297*	*326*	*305*	*181*	*1708*
Women	*184*	*298*	*317*	*405*	*395*	*366*	*227*	*2192*
All adults	*338*	*495*	*565*	*702*	*721*	*671*	*408*	*3900*

a WEMWBS scores range from 14 to 70. Higher scores indicate greater wellbeing. Mean WEMWBS score is part of the national mental health indicator set for adults

Table 8.3 WEMWBS mean scores (age-standardised), 2016, by area deprivation and sex

Aged 16 and over *2016*

WEMWBS scores[a]	Scottish Index of Multiple Deprivation				
	5th (Least deprived)	4th	3rd	2nd	1st (Most deprived)
Men					
Mean	50.9	50.4	50.6	49.3	47.7
SE of the mean	0.43	0.45	0.46	0.61	0.58
Standard deviation	7.15	7.75	8.10	9.05	9.56
Women					
Mean	52.2	50.6	50.2	48.8	47.1
SE of the mean	0.38	0.47	0.56	0.45	0.64
Standard deviation	7.65	8.06	8.90	8.66	9.60
All adults					
Mean	51.5	50.5	50.4	49.1	47.4
SE of the mean	0.26	0.37	0.39	0.42	0.46
Standard deviation	7.44	7.90	8.52	8.85	9.58
Bases (weighted):					
Men	*413*	*358*	*388*	*347*	*352*
Women	*447*	*357*	*414*	*387*	*420*
All adults	*860*	*715*	*803*	*734*	*772*
Bases (unweighted):					
Men	*387*	*387*	*385*	*294*	*255*
Women	*478*	*470*	*499*	*388*	*357*
All adults	*865*	*857*	*884*	*682*	*612*

a WEMWBS scores range from 14 to 70. Higher scores indicate greater wellbeing. Mean WEMWBS score is part of the national mental health indicator set for adults

Table 8.4 GHQ12 scores, 2003 to 2016

Aged 16 and over *2003 - 2016*

GHQ12 score[a]	2003	2008	2009	2010	2011	2012	2013	2014	2015	2016
Men										
0	67	64	65	65	65	66	64	65	63	65
1-3	20	23	23	22	23	22	23	20	22	22
4 or more	13	12	11	13	13	13	13	14	14	13
Women										
0	61	58	58	57	57	59	56	56	58	58
1-3	23	25	25	25	26	24	26	27	25	25
4 or more	17	17	17	17	17	17	18	17	17	17
All adults										
0	64	61	62	61	60	62	60	61	60	61
1-3	21	24	24	24	25	23	24	24	24	23
4 or more	15	15	14	15	15	15	16	16	16	15
Bases (weighted):										
Men	*3614*	*2819*	*3301*	*3177*	*3196*	*2073*	*2105*	*2015*	*2151*	*1865*
Women	*4057*	*3079*	*3589*	*3498*	*3559*	*2257*	*2343*	*2211*	*2356*	*2039*
All adults	*7672*	*5898*	*6890*	*6674*	*6755*	*4329*	*4448*	*4226*	*4507*	*3904*
Bases (unweighted):										
Men	*3380*	*2569*	*3007*	*2849*	*2904*	*1915*	*1939*	*1864*	*1992*	*1710*
Women	*4285*	*3301*	*3893*	*3823*	*3867*	*2436*	*2555*	*2382*	*2483*	*2209*
All adults	*7665*	*5870*	*6900*	*6672*	*6771*	*4351*	*4494*	*4246*	*4475*	*3919*

a GHQ 12 scores range from 0 to 12. Scores of 4 or more indicate low wellbeing / possible psychiatric disorder

Table 8.5 GHQ12 scores, 2016, by age and sex

Aged 16 and over *2016*

GHQ12 score[a]	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
Men								
0	62	62	66	63	68	72	61	65
1-3	20	25	19	24	20	19	27	22
4 or more	18	13	14	13	12	9	13	13
Women								
0	54	55	58	56	63	67	52	58
1-3	26	29	25	24	20	21	30	25
4 or more	20	16	16	21	17	12	18	17
All Adults								
0	58	58	62	59	65	69	55	61
1-3	23	27	22	24	20	20	29	23
4 or more	19	15	15	17	15	10	16	15
Bases (weighted):								
Men	*261*	*301*	*301*	*325*	*301*	*230*	*146*	*1865*
Women	*262*	*322*	*306*	*375*	*317*	*258*	*198*	*2039*
All adults	*523*	*623*	*607*	*701*	*618*	*488*	*344*	*3904*
Bases (unweighted):								
Men	*154*	*195*	*249*	*298*	*330*	*303*	*181*	*1710*
Women	*182*	*301*	*320*	*406*	*396*	*370*	*234*	*2209*
All adults	*336*	*496*	*569*	*704*	*726*	*673*	*415*	*3919*

a GHQ 12 scores range from 0 to 12. Scores of 4 or more indicate low wellbeing / possible psychiatric disorder

Table 8.6 GHQ12 scores (age-standardised), 2013-2016 combined, by alcohol consumption and sex

Aged 16 and over *2013-2016 combined*

GHQ12 score[a]	Alcohol consumption[b]				
	Non-drinker	Ex-drinker	Moderate	Hazardous	Harmful
	%	%	%	%	%
Men					
0	54	52	65	71	61
1-3	28	25	22	19	23
4 or more	18	23	13	10	16
Women					
0	46	39	60	62	48
1-3	32	30	25	26	27
4 or more	22	31	15	12	24
All adults					
0	49	45	62	67	58
1-3	31	28	23	22	24
4 or more	20	28	14	11	18
Bases (weighted):					
Men	*401*	*618*	*4198*	*2028*	*781*
Women	*691*	*893*	*5745*	*1233*	*253*
All adults	*1092*	*1511*	*9944*	*3261*	*1034*
Bases (unweighted):					
Men	*331*	*653*	*3885*	*1810*	*741*
Women	*747*	*1013*	*6226*	*1287*	*266*
All adults	*1078*	*1666*	*10111*	*3097*	*1007*

a GHQ 12 scores range from 0 to 12. Scores of 4 or more indicate low wellbeing / possible psychiatric disorder

b Non-drinkers: never drank; Ex-drinker: used to drink but stopped/ doesn't currently drink; moderate drinker 0 up to 14; Hazardous> 14 units and up to 35 units; Harmful> 35 units

Table 8.7 Life satisfaction mean scores, 2016, by age and sex

Aged 16 and over *2016*

Life satisfaction[a]	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Above average (9-10)	36	28	26	29	32	40	36	32
Average (8)	32	37	37	33	32	30	31	33
Below average (0-7)	32	35	37	38	36	30	33	35
Mean score	8.0	7.8	7.7	7.5	7.6	7.9	7.9	7.7
SE of mean	0.13	0.11	0.11	0.12	0.11	0.11	0.12	0.05
Women								
Above average (9-10)	38	35	32	29	38	41	37	35
Average (8)	37	38	33	31	27	31	28	32
Below average (0-7)	25	28	35	39	35	28	35	33
Mean score	8.1	7.9	7.7	7.4	7.7	7.9	7.8	7.8
SE of mean	0.12	0.09	0.11	0.11	0.10	0.11	0.13	0.05
All adults								
Above average (9-10)	37	31	29	29	35	41	36	34
Average (8)	35	37	35	32	29	30	29	33
Below average (0-7)	28	31	36	39	36	29	34	34
Mean score	8.1	7.9	7.7	7.5	7.6	7.9	7.8	7.8
SE of mean	0.10	0.08	0.08	0.09	0.08	0.08	0.10	0.04
Bases (weighted):								
Men	*286*	*338*	*319*	*378*	*326*	*254*	*167*	*2069*
Women	*283*	*352*	*336*	*407*	*343*	*280*	*235*	*2237*
All adults	*569*	*690*	*655*	*786*	*669*	*534*	*402*	*4306*
Bases (unweighted):								
Men	*168*	*213*	*264*	*340*	*360*	*336*	*208*	*1889*
Women	*198*	*324*	*346*	*440*	*432*	*398*	*282*	*2420*
All adults	*366*	*537*	*610*	*780*	*792*	*734*	*490*	*4309*

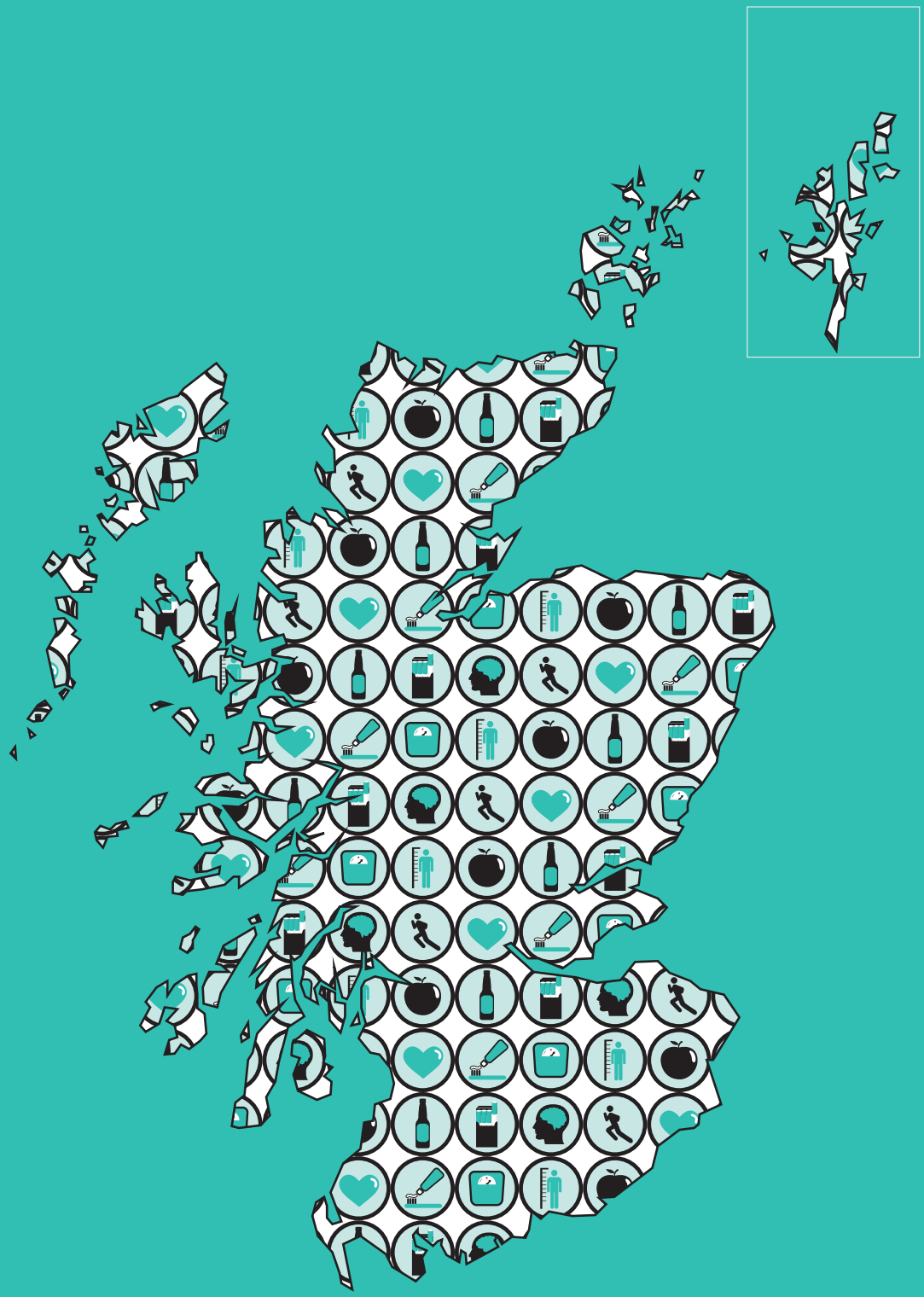
a Life satisfaction was assessed using a 0-10 scale where 0 was "extremely dissatisfied" and 10 "extremely satisfied"

Table 8.8 Life satisfaction mean scores (age-standardised), 2016, by area deprivation and sex

Aged 16 and over *2016*

Life satisfaction[a]	Scottish Index of Multiple Deprivation				
	5th (Least deprived)	4th	3rd	2nd	1st (Most deprived)
	%	%	%	%	%
Men					
Above average (9-10)	35	38	37	25	23
Average (8)	38	30	30	33	35
Below average (0-7)	27	31	33	42	42
Mean score	8.0	7.9	7.8	7.5	7.4
SE of mean	0.08	0.08	0.11	0.12	0.12
Women					
Above average (9-10)	44	40	37	29	28
Average (8)	34	32	34	37	25
Below average (0-7)	22	28	30	34	46
Mean score	8.2	8.0	7.8	7.6	7.3
SE of mean	0.07	0.11	0.10	0.09	0.13
All adults					
Above average (9-10)	40	39	37	27	26
Average (8)	36	31	32	35	30
Below average (0-7)	24	30	31	38	45
Mean score	8.1	8.0	7.8	7.5	7.3
SE of mean	0.06	0.08	0.08	0.09	0.10
Bases (weighted):					
Men	*443*	*386*	*446*	*382*	*411*
Women	*471*	*385*	*454*	*429*	*498*
All adults	*914*	*771*	*900*	*811*	*909*
Bases (unweighted):					
Men	*421*	*421*	*430*	*324*	*293*
Women	*509*	*504*	*549*	*437*	*421*
All adults	*930*	*925*	*979*	*761*	*714*

a Life satisfaction was assessed using a 0-10 scale where 0 was "extremely dissatisfied" and 10 "extremely satisfied"



Chapter 9

Cardiovascular Conditions and Diabetes

SUMMARY

- Among adults aged 16 and over, 19% had some form of cardiovascular disease (CVD) or diabetes, 15% had any CVD, and 5% had diabetes. These numbers have remained relatively stable in recent years.

of adults diagnosed with a CVD condition or diabetes

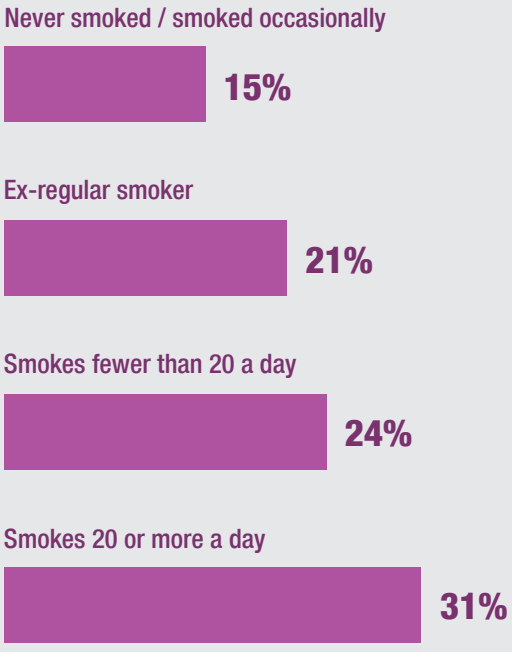
The proportion of adults with doctor diagnosed diabetes has remained stable in recent years

- In 2016, 8% of adults reported ischaemic heart disease (IHD) or stroke. This level has remained unchanged since 2008.
- Older people were more likely to have some form of CVD or diabetes than young people (47% of those aged 75 and over compared with 5% of those aged 16-24).
- The prevalence of IHD or stroke was also significantly associated with age, with less than 1% of those aged 16-44 reporting, compared with 29% of those aged 75 and over.

Women were less likely to report IHD or stroke than men

- In 2016, those in the most deprived areas reported a higher prevalence of some form of CVD than those in the least deprived areas (18% and 12% respectively).
- Prevalence of any CVD was highest among ex-drinkers (23%) followed by those that had never drunk alcohol (18%) or drank over 35 units per week (17%). Prevalence was lowest for those who drank between 14 and 35 units per week (13%) or drank within the recommended guidelines of a maximum of 14 units a week (15%) .
- Ex-drinkers were more likely to have had a stroke (5%) than those drinking within or outwith the recommended guidelines (2-3%) and never drinkers (3%), (age standardised).
- The prevalence of CVDs (with the exception of stroke) and diabetes was significantly higher among adults who were obese, compared with those who were underweight, of normal weight, or overweight (but not obese).

Adults who smoked 20 cigarettes a day or more had a higher prevalence of CVD conditions or diabetes



9 CARDIOVASCULAR CONDITIONS AND DIABETES

Suzanne Hill

9.1 INTRODUCTION

Cardiovascular disease (CVD) is a general term describing diseases of the heart and blood vessels whereby blood flow to the heart, brain or body is restricted. It is one of the leading contributors to the global disease burden[1]. Its main components are ischaemic heart disease (IHD, or coronary heart disease) and stroke, both of which have been identified as clinical priorities for the NHS in Scotland[2,3]. Diseases of the circulatory system are the second most common causes of death in Scotland after cancer, accounting for 27% of deaths in 2016 (compared with 29% for cancer). This includes 12% of deaths which are caused by IHD, with a further 7% caused by cerebrovascular disease (e.g. stroke) [4]. Early mortality from heart disease and stroke have both improved in recent years, but concern remains about continuing inequalities in relation to morbidity and mortality linked to these conditions[2,3].

The increasing prevalence (albeit at a reduced rate) of diabetes, the most common metabolic disorder, is a major health issue for Scotland. The prevalence of diabetes continues to increase for a number of reasons including an ageing population, better survival, and better detection rates for Type 2 diabetes and a steady increase in the incidence of Type 1 diabetes in Scottish children over the last 40 years[5]. Scotland has one of the highest levels of Type 1 diabetes in Europe, but it is the increasing prevalence of Type 2 diabetes – linked to obesity, physical inactivity and ageing – which is driving the increased prevalence and causing concern[6]. Diabetes is a risk factor in premature mortality, although more effective treatments of diabetes and hypertension have offset some of the excess risk in recent years and mean some people may be living longer and better with the condition[7].

9.1.1 Policy background

A key Scottish Government **National Performance Framework National Outcome** is for people in Scotland to 'live longer, healthier lives'[7]. There is also a National Performance indicator to 'reduce premature mortality' (deaths from all causes in those aged under 75)[8]. CVD is described as one of the key 'big killer' diseases around which action must be taken if this target is to be met. In addition, a number of the National Indicators[9] are linked to key CVD risk factors, most notably smoking[10], but also physical activity[11] and healthy weight children[12] (the latter two are also major risk factors for Type 2 diabetes). Due to the clinical priority given to heart disease and stroke by the Scottish Government, there has been some success in reducing death rates from these diseases in recent years[15].

In recognition of the challenges posed by CVD and diabetes as long-term conditions for individuals, their families and health and care services – the Scottish Government's first over-arching strategy for long-term conditions was published in 2009. The **Action Plan** recognised the need for system-wide action in response to the

challenge presented by the increasing prevalence of long-term conditions within the context of an ageing population, the links to health inequalities, and the particular challenges of multi-morbidity (the presence of two or more long-term conditions). Now, responding to the context of the ageing population and the increasing number of people living with long term conditions and multi-morbidity in Scotland, the strategic focus for improving general health and wellbeing and supporting people living with long term conditions is set-out in three over-arching strategies.

The National Clinical Strategy[13], published in 2016, is the high level vision for how health and social care services will develop over the next 10-15 years. **The Health and Social Care Delivery Plan**[14] sets out the programme to further enhance health and social care services so people can live longer, healthier lives at home or in a homely setting. These establish the overarching aims for public health concerned with prevention, early intervention and supported self-management. In **Realising Realistic Medicine**[15], published in 2017, the government sets out plans to adopt Realistic Medicine, moving away from a culture where 'doctor knows best' to one where people receiving care are at the centre of decision-making and professionals are encouraged to take a personalised approach to their care.

The separate **Heart Disease**[2], **Stroke**[3] and **Diabetes**[16] **Improvement Plans,** published in August 2014 and November 2014, align with the approaches set out in the three overarching strategies above. They reaffirm the aims and priorities on improved prevention, treatment and care in heart disease, stroke and diabetes, focusing on clinical outcomes and patient experience. They build on the **Heart Disease and Stroke Action Plan**[17] which was published in 2009, and the **Diabetes Action Plan**[6] which was published in 2010, both of which set out a comprehensive programme for further reducing deaths and improving the lives of people living with heart disease, stroke and diabetes. Diabetes is known to increase the risk of CVD and the **Diabetes Improvement Plan**[16] focusses priority action to improve glycaemic control to reduce risk of associated complications and additionally to identify risk of complications early ensuring prompt treatment.

9.1.2 Reporting on CVD conditions and diabetes in the Scottish Health Survey (SHeS)

Valuable information on the prevalence of CVD conditions and diabetes in Scotland is provided by SHeS. It also offers useful information on the patterning of these conditions across different population groups. In this chapter, trends in self-reported CVD conditions and diabetes prevalence for adults are updated for 2016. Self-reported CVD conditions and diabetes are also reported for 2016 by age, sex, deprivation, alcohol consumption, smoking status, overweight and obesity.

The area deprivation data for CVD conditions and diabetes are presented in Scottish Index of Multiple Deprivation (SIMD) quintiles. To ensure that the comparisons presented are not confounded by the different age profiles of the quintiles, the data have been age-standardised. Readers should refer to the Glossary at the end of this Volume for a detailed description of both SIMD and age-standardisation.

Supplementary tables on CVD conditions and diabetes are also published on the Scottish Health Survey website[18].

9.2 METHODS AND DEFINITIONS

9.2.1 Methods

Participants were asked whether they had ever suffered from any of the following conditions: diabetes, angina, heart attack, stroke, heart murmur, irregular heart rhythm, or 'other heart trouble'. If they responded affirmatively to any of these conditions, participants were asked whether they had ever been told they had the condition by a doctor and whether they had experienced the conditions in the previous 12 months. For the purposes of the analysis presented in this chapter, participants were only classified as having a particular condition if they reported that the diagnosis had been confirmed by a doctor.

It is important to note that no attempt was made to verify these self-reported diagnoses objectively. It is therefore possible that some misclassification may have occurred because some participants may not have remembered (or not remembered correctly, or not known about) diagnoses made by their doctor.

9.2.2 Definitions

Any CVD condition

Participants were classified as having 'any CVD' if they reported ever having any of the following conditions confirmed by a doctor: angina, heart attack, stroke, heart murmur, abnormal heart rhythm, or 'other heart trouble'[19].

Diabetes

Participants were classified as having diabetes if they reported a confirmed doctor diagnosis. Women whose diabetes occurred only during pregnancy were excluded from the classification. No distinction was made between Type 1 and Type 2 diabetes in the interview.

Any CVD condition or diabetes

A summary measure of the above conditions is presented in the tables as 'any CVD condition or diabetes'.

Ischaemic heart disease (IHD)

Participants were classified as having IHD if they reported ever having angina or a heart attack confirmed by a doctor. All tables refer to **ever** having had the condition.

Stroke

Participants were classified as having a stroke if they reported **ever** having had a stroke confirmed by a doctor.

IHD or stroke

A summary measure of the above conditions is presented in the tables as 'IHD or stroke'.

9.3 CARDIOVASCULAR CONDITIONS AND DIABETES

9.3.1 Trends in any CVD, diabetes, any CVD or diabetes, IHD, stroke, and IHD or stroke prevalence since 2003

Any CVD

In 2016, 15% of adults reported having ever been diagnosed with any CVD condition. This figure has remained relatively stable across survey years (14-16% between 2003 and 2016), and has not changed significantly during this time period.

The proportion of men reporting any CVD conditions has not changed significantly between 2003 and 2016, with fluctuations from 15% in the period from 2003-2009 to a high of 18% in 2014, dropping to 16% in 2015 and 2016. Similarly for women there has been no significant change in prevalence for any CVD across the period 2003 to 2016, with levels fluctuating between 14% and 16% (15% in 2016). **Table 9.1**

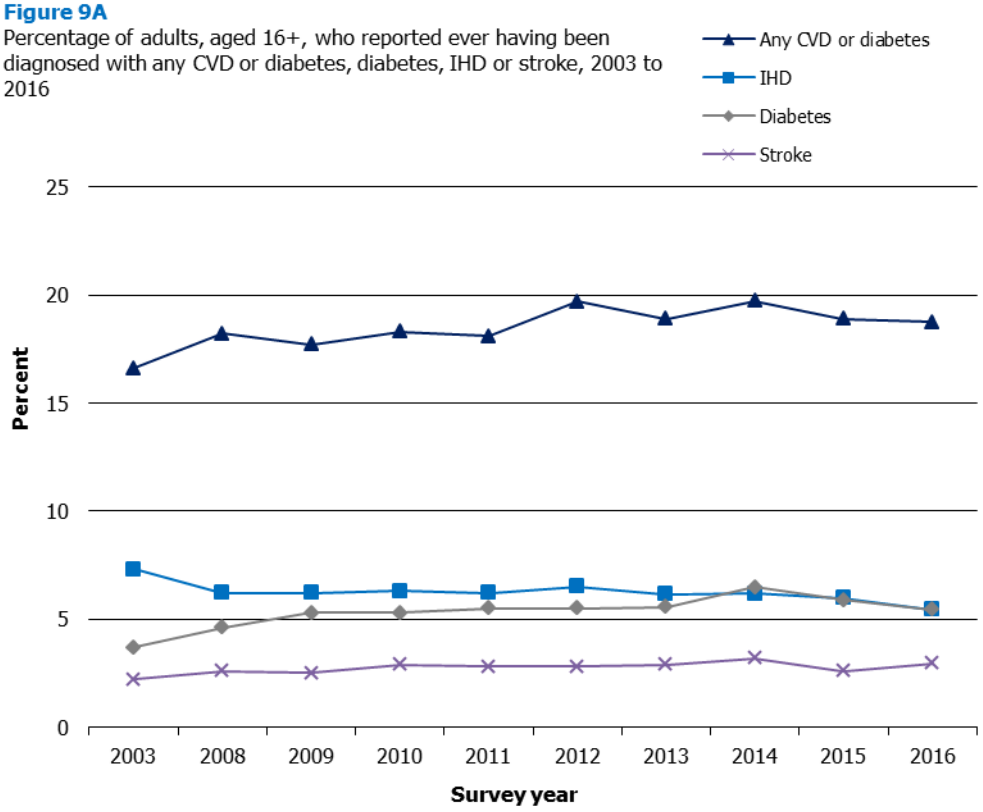
Doctor-diagnosed diabetes

The prevalence of doctor-diagnosed diabetes was significantly higher in 2016 (5%) than in 2003 (4%). Prevalence in 2016 was not significantly different from 2015 (6%).

The prevalence of doctor-diagnosed diabetes reported by men has decreased significantly from 8% in 2014 to 6% in 2016. Prevalence rates had previously risen from 4% in 2003 to 8% in 2014. For women, the proportion reporting doctor-diagnosed diabetes has been stable at 5% since 2011. **Figure 9A, Table 9.1**

Figure 9A

Percentage of adults, aged 16+, who reported ever having been diagnosed with any CVD or diabetes, diabetes, IHD or stroke, 2003 to 2016



Any CVD or diabetes

In 2016, 19% of adults reported experiencing any CVD or diabetes, a significant increase since 2003, when prevalence was 17%. However, prevalence has remained largely unchanged in recent years, staying between 19-20% from 2012 to 2016.

The proportion of men reporting any CVD or diabetes in 2016 was 19%. This rate has fluctuated between 18% and 23% since 2008. There has been a significant increase in any CVD or diabetes in women between 2003 (16%) and 2016 (18%) with levels fluctuating between 16% and 19% over that time period. **Figure 9A, Table 9.1**

IHD

The proportion of adults reporting an IHD diagnosis (angina or heart attack) has significantly decreased from 7% in 2003 to 5% in 2016, with the level having been largely stable in the intervening years (6-7%).

The proportion of men reporting a diagnosis of IHD in 2016 remained stable at 7%. The rate has been 7% or 8% in each of the years between 2003 and 2016. The prevalence of IHD for women was 4% in 2016, continuing the general downward trend from 7% in 2003.

Figure 9A, Table 9.1

Stroke

In 2016 the proportion of adults reporting stroke was 3%, this level has remained stable since 2008. However, it was significantly higher than 2003 when prevalence was at 2%.

There were no significant differences between men and women in prevalence of stroke. **Figure 9A, Table 9.1**

IHD or stroke

The proportion of adults reporting an IHD or stroke diagnosis in 2016 has remained stable since 2008 (8%) but was significantly lower than in 2003 (9%).

This is largely accounted for by the proportion of women reporting IHD or stroke falling significantly from 8% in 2003 to 6% in 2015 and 2016. There has been no significant change in the proportion of men reporting IHD or stroke since 2003 with prevalence fluctuating between 9 and 10%. **Table 9.1**

9.3.2 Any CVD, doctor-diagnosed diabetes, any CVD or diabetes, IHD, stroke, IHD or stroke, 2016, by age and sex

Any CVD

In 2016, 15% of all adults reported being diagnosed with any CVD condition. There was a positive association between the prevalence of any CVD condition and age, with a steady increase across the age categories from 5% for those aged 16-24 to 40% for those aged 75 and over.

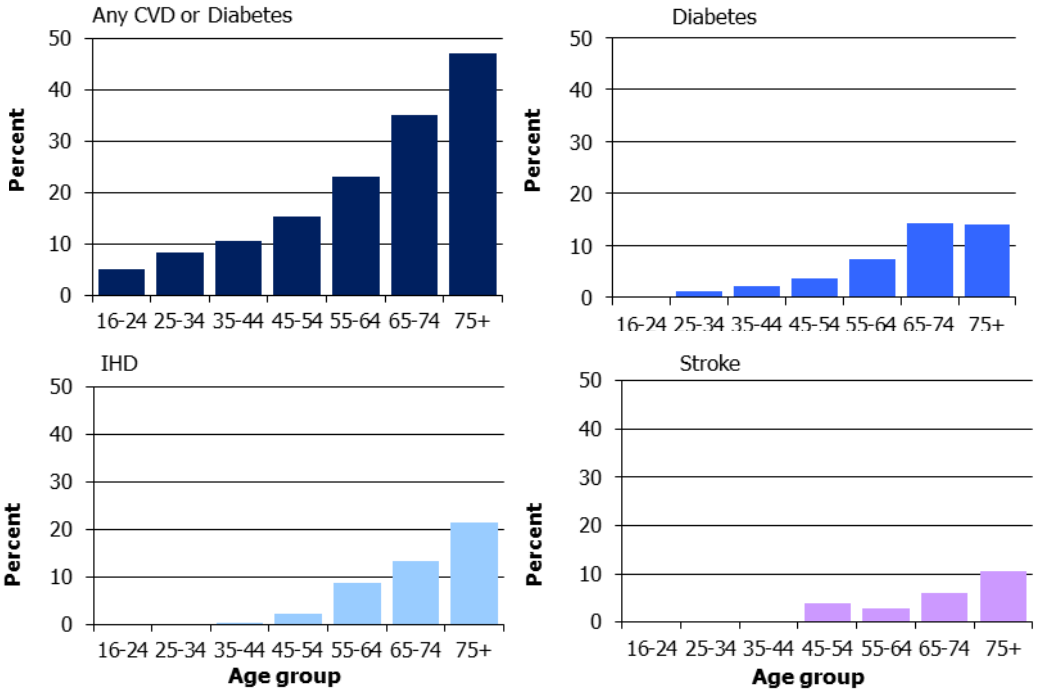
For all adults, prevalence of any CVD did not differ significantly between men (16%) and women (15%). A significant increase in any CVD by age was observed for both groups. **Table 9.2**

Doctor-diagnosed diabetes

The prevalence of doctor-diagnosed diabetes for all adults was 5% overall in 2016, with a significant upward gradient from those aged 16-34 (0-1%) to those aged 65 and over (14%).

There was no significant difference in the prevalence of doctor-diagnosed diabetes between men (6%) and women (5%). A significant increase in doctor-diagnosed diabetes by age was observed for both men and women. Prevalence rose above 0% in an earlier age group for women (age 25-34) than for men (age 35-44) but increased on a steeper gradient for men than for women. **Figure 9B, Table 9.2**

Figure 9B
Percentage of adults, aged 16+, who reported ever being diagnosed with any CVD, diabetes, IHD or stroke, 2016, by age



Any CVD or diabetes

In 2016 the overall proportion of adults reporting any CVD or diabetes was 19%. There was a significant increase in prevalence of CVD or diabetes with age (from 5% in those aged 16-24 to 47% in those aged 75 and over).

There were no significant differences between men (19%) and women (18%) in the overall prevalence of any CVD or diabetes.

The positive association between any CVD or doctor-diagnosed diabetes and age was observed for both men and women. Prevalence in those aged 16-24 was 5% for both men and women and rose steadily to 48% for men aged 75 and over and 46% for women aged 75 and over. **Figure 9B, Table 9.2**

IHD

The prevalence of IHD diagnosis for all adults was 5% in 2016, with no adults reporting IHD until reaching the 35-44 age group (less than 1%). Prevalence then increased steadily with age, with 21% of adults aged 75 and over reporting an IHD diagnosis. The same age effect was apparent in both men and women, with younger age groups reporting significantly less IHD than older age groups.

There was a significant difference in IHD prevalence between men and women, with 7% of men reporting IHD compared with 4% of women. This difference between men and women can be accounted for by the significantly lower prevalence levels of IHD amongst women aged 55-64 than amongst men aged 55-64 (5% for women compared with 13% for men) and significantly lower prevalence levels of IHD amongst

women aged 65-74 than amongst men aged 65-74 (8% for women compared with 20% for men). **Figure 9B, Table 9.2**

Stroke

In 2016, as in previous years[20], the proportion of all adults reporting ever having had a stroke was low (3%).

No significant difference was observed in prevalence of stroke between men and women (both 3%).

As with other CVD conditions, prevalence of stroke was positively associated with age for all adults (rising from less than 1% amongst 16-44 year olds to 10% amongst those aged 75 and over. A similar pattern was observed for both men and women. **Figure 9B, Table 9.2**

IHD or stroke

Whilst the proportion of all adults reporting IHD or stroke was low (8%) prevalence increased significantly with age (with 29% of those aged 75 and over reporting IHD or stroke compared with less than 1% of those aged 16-44).

There was a significant difference in the prevalence of IHD or stroke between men and women, with men more likely to report than women (9% compared with 6%).

For both men and women the prevalence of IHD or stroke increased significantly with age. Amongst those aged 16-44, prevalence for both sexes ranged from none to 1%. This was followed by an increase amongst those aged 45-54 to 8% for men and 4% for women before increasing steadily to those aged 75 and over (30% for men and 29% for women). **Table 9.2**

9.3.3 Any CVD, doctor-diagnosed diabetes, any CVD or diabetes, IHD, stroke, IHD or stroke (age-standardised), 2016, by deprivation and sex

In 2016 there was a relationship between area deprivation and age-standardised prevalence of any CVD, with higher prevalence in the most deprived areas (18%) compared with the least deprived areas (12%). This association was true for all cardiovascular conditions and diabetes.

The relationship between area deprivation and all cardiovascular conditions and diabetes was the same for both men and women, with higher prevalence of cardiovascular conditions in more deprived areas for both sexes. **Table 9.3**

9.3.4 Any CVD, doctor-diagnosed diabetes, any CVD or diabetes, IHD, stroke, IHD or stroke (age-standardised), 2013-2016 combined, by alcohol consumption and sex

Age-standardised prevalence of any CVD was highest amongst ex-drinkers (23%) followed by non-drinkers (18%). Those drinking at hazardous levels were least likely to report any CVD (13%). A similar pattern of highest prevalence amongst ex-drinkers (followed by non-drinkers) and lowest prevalence amongst those drinking at hazardous level was found for all cardiovascular conditions and diabetes apart from stroke. For stroke, prevalence was the same for non-drinkers and those drinking at hazardous and harmful levels (3%).

There were some differences in prevalence between men and women. For men, the pattern of highest prevalence amongst ex-drinkers followed by non-drinkers and lowest prevalence amongst those drinking at hazardous levels was found across all cardiovascular conditions and diabetes. For women some different patterns emerged, for example, for any CVD, among women prevalence was highest for ex-drinkers (22%) followed by those drinking at a harmful level (18%) and for stroke, among women prevalence was highest for ex-drinkers and those drinking at a harmful level (5%).

These data should be interpreted with caution. Prevalence of CVD conditions and diabetes are much higher in older age groups and an individual's drinking habits can change over time. In particular, the decision to stop drinking or reduce consumption levels could be influenced by the onset of a condition and consequent medical advice.

Table 9.4

9.3.5 Any CVD, doctor-diagnosed diabetes, any CVD or diabetes, IHD, stroke, IHD or stroke (age-standardised), 2016, by smoking status and sex

The prevalence of any CVD was lowest amongst those who had never or occasionally smoked (11%) and highest amongst those who smoked 20 or more cigarettes a day (26%).

Similar patterns were observed for any CVD or diabetes (rising from 15% to 31%), stroke (rising from 2% to 12%) and IHD or stroke (rising from 5% to 15%).

Although doctor-diagnosed diabetes prevalence appears to increase with smoking status, this finding was not statistically significant. Also, no statistically significant association was found between IHD and smoking status.

Similar relationships between smoking status and cardiovascular diagnoses were observed in both men and women. **Table 9.5**

9.3.6 Any CVD, doctor-diagnosed diabetes, any CVD or diabetes, IHD, stroke, IHD or stroke (age-standardised), 2016, by BMI and sex

In 2016 the prevalence of most cardiovascular disease and diabetes was significantly associated with BMI. Prevalence of diabetes, any CVD or diabetes, IHD and IHD or stroke was significantly higher among adults that were obese compared with adults that were underweight or normal weight.

Prevalence of any CVD (excluding diabetes) was significantly higher among adults that were obese compared with adults that were overweight but was not significantly different to adults that were underweight or normal weight.

Prevalence of stroke was not significantly associated with BMI; prevalence was 3% for both the underweight/normal weight group and the obese group.

Similar patterns were observed for men and women. **Table 9.6**

References and notes

[1] Lozano R. et al. (2012). Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: a systematic analysis for the Global Burden of Disease Study 2010. *The Lancet*; 380(9859): 2095-128.

[2] *Heart Disease Improvement Plan.* Edinburgh: Scottish Government, 2014. Available from: www.gov.scot/Resource/0045/00458289.pdf

[3] *Stroke Improvement Plan*, Edinburgh: Scottish Government, 2014. Available from: www.gov.scot/Resource/0045/00458309.pdf

[4] See: https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/general-publications/births-deaths-and-other-vital-events-preliminary-annual-figures/2016

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[7] See: www.gov.scot/About/Performance/scotPerforms/outcome

[8] See: www.gov.scot/About/Performance/scotPerforms/indicator/mortality

[9] See: www.gov.scot/About/Performance/scotPerforms

[10] See: www.gov.scot/About/Performance/scotPerforms/indicator/smoking

[11] See: www.gov.scot/About/Performance/scotPerforms/indicator/physicalactivity

[12] See: www.gov.scot/About/Performance/scotPerforms/indicator/healthyweight

[13] *A National Clinical Strategy for Scotland,* Edinburgh: Scottish Government, 2016. Available from: http://www.gov.scot/Publications/2016/02/8699

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[16] *Diabetes Improvement Plan*. Edinburgh, Scottish Government. 2014. www.gov.scot/Publications/2014/11/6742

[17] *Better Heart Disease and Stroke Care Action Plan*, Edinburgh, Scottish Government, 2009 Available from: http://www.gov.scot/Publications/2009/06/29102453/0

[18] See: www.gov.scot/scottishhealthsurvey

[19] Diabetes and high blood pressure are not included in the definition of 'any CVD condition' as they are risk factors for CVD.

[20] Brown, L (2016). Chapter 9: Cardiovascular diseases and diabetes. In: Campbell-Jack, D and Hinchliffe S (eds*). Scottish Health Survey 2015 - Volume 1 Main Report.* Available from: http://www.gov.scot/Publications/2016/09/2764

Table list

Table 9.1 Any CVD, doctor-diagnosed diabetes, any CVD or diabetes, IHD, stroke, IHD or stroke, 2003 to 2016

Aged 16 and over *2003 - 2016*

Any CVD[a] / doctor-diagnosed diabetes[b] / any CVD or diabetes[b] / IHD[c] / stroke / IHD or stroke	2003	2008	2009	2010	2011	2012	2013	2014	2015	2016
	%	%	%	%	%	%	%	%	%	%
Men										
Any CVD	15	15	15	16	16	17	16	18	16	16
Doctor-diagnosed diabetes	4	5	6	6	6	6	6	8	7	6
Any CVD or diabetes	17	18	19	20	19	20	19	23	20	19
IHD	8	7	7	8	8	7	7	8	7	7
Stroke	2	3	3	3	3	3	3	3	3	3
IHD or stroke	10	9	9	10	9	9	10	10	9	9
Women										
Any CVD	15	16	14	14	14	16	15	14	15	15
Doctor-diagnosed diabetes	4	4	5	4	5	5	5	5	5	5
Any CVD or diabetes	16	18	17	17	17	19	19	17	18	18
IHD	7	6	5	5	5	6	5	5	5	4
Stroke	2	3	2	3	3	3	3	3	3	3
IHD or stroke	8	8	7	7	7	8	7	7	6	6
All adults										
Any CVD	15	15	14	15	15	16	15	16	15	15
Doctor-diagnosed diabetes	4	5	5	5	6	6	6	6	6	5
Any CVD or diabetes	17	18	18	18	18	20	19	20	19	19
IHD	7	6	6	6	6	7	6	6	6	5
Stroke	2	3	3	3	3	3	3	3	3	3
IHD or stroke	9	8	8	8	8	8	8	8	8	8
Bases (weighted):										
Men	*3855*	*3086*	*3601*	*3465*	*3608*	*2308*	*2345*	*2236*	*2400*	*2077*
Women	4287	3372	3926	3774	3931	2506	2545	2421	*2595*	*2243*
All adults	*8142*	*6459*	*7526*	*7240*	*7539*	*4814*	*4889*	*4657*	*4996*	*4321*
Bases (unweighted):										
Men	*3608*	*2840*	*3287*	*3112*	*3277*	*2125*	*2139*	*2066*	*2247*	*1894*
Women	*4534*	*3618*	*4239*	*4127*	*4261*	*2688*	*2752*	*2588*	*2748*	*2427*
All adults	*8142*	*6458*	*7526*	*7239*	*7538*	*4813*	*4891*	*4654*	*4995*	*4321*

a Any cardiovascular condition, including IHD (heart attack or angina), stroke, heart murmur, abnormal heart rhythm or 'other heart trouble' - excludes diabetes and high blood pressure

b Excludes diabetes diagnosed during pregnancy

c Heart attack or angina

Table 9.2 Any CVD, doctor-diagnosed diabetes, any CVD or diabetes, IHD, stroke, IHD or stroke, 2016, by age and sex

Aged 16 and over *2016*

Any CVD[a] / doctor-diagnosed diabetes[b] / any CVD or diabetes[b] / IHD[c] / stroke / IHD or stroke	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Any CVD	5	8	5	13	20	32	41	16
Doctor-diagnosed diabetes	0	0	3	5	9	16	15	6
Any CVD or diabetes	5	9	8	15	26	41	48	19
IHD	-	-	-	4	13	20	21	7
Stroke	1	-	0	5	3	8	10	3
IHD or Stroke	1	-	0	8	15	25	30	9
Women								
Any CVD	5	6	12	13	16	21	40	15
Doctor-diagnosed diabetes	-	2	2	3	6	13	13	5
Any CVD or diabetes	5	8	13	15	20	30	46	18
IHD	-	-	0	1	5	8	21	4
Stroke	-	0	0	3	2	4	11	3
IHD or Stroke	-	0	0	4	7	11	29	6
All adults								
Any CVD	5	7	9	13	18	26	40	15
Doctor-diagnosed diabetes	0	1	2	4	7	14	14	5
Any CVD or diabetes	5	8	11	15	23	35	47	19
IHD	-	-	0	2	9	13	21	5
Stroke	0	0	0	4	3	6	10	3
IHD or Stroke	0	0	0	6	11	17	29	8
Bases (weighted):								
Men	*289*	*338*	*320*	*382*	*326*	*255*	*167*	*2077*
Women	*283*	*354*	*338*	*407*	*344*	*281*	*235*	*2243*
All adults	*572*	*692*	*658*	*790*	*670*	*536*	*402*	*4321*
Bases (unweighted):								
Men	*169*	*213*	*265*	*342*	*360*	*337*	*208*	*1894*
Women	*198*	*326*	*347*	*440*	*433*	*400*	*283*	*2427*
All adults	*367*	*539*	*612*	*782*	*793*	*737*	*491*	*4321*

a Any cardiovascular condition, including IHD (heart attack or angina), stroke, heart murmur, abnormal heart rhythm or 'other heart trouble' - excludes diabetes and high blood pressure

b Excludes diabetes diagnosed during pregnancy

c Heart attack or angina

Table 9.3 Any CVD, doctor-diagnosed diabetes, any CVD or diabetes, IHD, stroke, IHD or stroke (age-standardised), 2016, by area deprivation and sex

Aged 16 and over *2016*

Any CVD[a] / doctor-diagnosed diabetes[b] / any CVD or diabetes[b] / IHD[c] / stroke / IHD or stroke	Scottish Index of Multiple Deprivation				
	5th (least deprived)	4th	3rd	2nd	1st (most deprived)
	%	%	%	%	%
Men					
Any CVD	11	16	17	18	17
Doctor-diagnosed diabetes	5	4	5	7	8
Any CVD or diabetes	15	18	21	22	21
IHD	5	7	6	9	8
Stroke	3	2	3	3	5
IHD or Stroke	7	9	9	11	12
Women					
Any CVD	13	13	14	15	20
Doctor-diagnosed diabetes	3	3	5	6	8
Any CVD or diabetes	15	15	18	19	25
IHD	3	3	3	6	7
Stroke	2	2	2	2	4
IHD or Stroke	5	4	5	8	10
All adults					
Any CVD	12	14	16	16	18
Doctor-diagnosed diabetes	4	4	5	6	8
Any CVD or diabetes	15	17	19	20	23
IHD	4	5	5	7	7
Stroke	3	2	3	3	5
IHD or Stroke	6	6	7	9	11
Bases (weighted):					
Men	*444*	*386*	*446*	*389*	*413*
Women	*474*	*385*	*457*	*430*	*498*
All adults	*918*	*771*	*903*	*818*	*910*
Bases (unweighted):					
Men	*422*	*421*	*430*	*327*	*294*
Women	*512*	*505*	*552*	*438*	*420*
All adults	*934*	*926*	*982*	*765*	*714*

a Any cardiovascular condition, including IHD (heart attack or angina), stroke, heart murmur, abnormal heart rhythm or 'other heart trouble' - excludes diabetes and high blood pressure

b Excludes diabetes diagnosed during pregnancy

c Heart attack or angina

Table 9.4 Any CVD, doctor-diagnosed diabetes, any CVD or diabetes, IHD, stroke, IHD or stroke (age-standardised), 2013-2016 combined, by alcohol consumption and sex

Aged 16 and over *2013-2016 combined*

Any CVD[a] / doctor-diagnosed diabetes[b] / any CVD or diabetes[b] / IHD[c] / stroke / IHD or stroke	Alcohol consumption[b]				
	Non-drinker	Ex-drinker	Moderate	Hazardous	Harmful
	%	%	%	%	%
Men					
Any CVD	19	25	16	14	16
Doctor-diagnosed diabetes	9	11	7	4	6
Any CVD or diabetes	26	29	20	17	20
IHD	9	11	7	6	7
Stroke	4	5	3	2	3
IHD or Stroke	13	14	10	8	9
Women					
Any CVD	17	22	14	11	18
Doctor-diagnosed diabetes	7	10	5	2	2
Any CVD or diabetes	21	28	17	13	19
IHD	6	8	4	3	2
Stroke	3	5	2	2	5
IHD or Stroke	8	11	6	5	6
All adults					
Any CVD	18	23	15	13	17
Doctor-diagnosed diabetes	7	10	6	3	5
Any CVD or diabetes	23	29	18	16	20
IHD	7	9	6	5	6
Stroke	3	5	3	2	3
IHD or Stroke	10	13	8	7	8
Bases (weighted):					
Men	*478*	*690*	*4596*	*2211*	*885*
Women	*809*	*998*	*6240*	*1317*	*277*
All adults	*1287*	*1689*	*10836*	*3528*	*1162*
Bases (unweighted):					
Men	*390*	*748*	*4264*	*1980*	*829*
Women	*884*	*1148*	*6715*	*1366*	*283*
All adults	*1274*	*1896*	*10979*	*3346*	*1112*

a Any cardiovascular condition, including IHD (heart attack or angina), stroke, heart murmur, abnormal heart rhythm or 'other heart trouble' - excludes diabetes and high blood pressure

b Excludes diabetes diagnosed during pregnancy

c Heart attack or angina

d Non-drinkers: never drank; Ex-drinker: used to drink but stopped/ doesn't currently drink; moderate drinker 0 up to 14; Hazardous> 14 units and up to 35 units; Harmful> 35 units

Table 9.5 Any CVD, doctor-diagnosed diabetes, any CVD or diabetes, IHD, stroke, IHD or stroke (age-standardised), 2016, by smoking status and sex

Aged 16 and over *2016*

Any CVD[a] / doctor-diagnosed diabetes[b] / any CVD or diabetes[b] / IHD[c] / stroke / IHD or stroke	**Smoking status**			
	Never smoked / smoked occasionally	Ex-regular smoker	Smokes fewer than 20 a day	Smokes 20 or more a day
	%	%	%	%
Men				
Any CVD	10	17	23	31
Doctor-diagnosed diabetes	6	6	7	7
Any CVD or diabetes	14	20	26	33
IHD	4	8	10	7
Stroke	2	2	7	14
IHD or Stroke	6	10	15	20
Women				
Any CVD	12	18	17	17
Doctor-diagnosed diabetes	4	5	7	12
Any CVD or diabetes	15	21	22	28
IHD	3	6	5	2
Stroke	2	2	4	8
IHD or Stroke	4	8	8	9
All adults				
Any CVD	11	17	20	26
Doctor-diagnosed diabetes	5	6	7	9
Any CVD or diabetes	15	21	24	31
IHD	3	7	7	5
Stroke	2	2	5	12
IHD or Stroke	5	9	11	15
Bases (weighted):				
Men	*1068*	*522*	*309*	*130*
Women	*1280*	*506*	*360*	*76*
All adults	*2348*	*1028*	*669*	*205*
Bases (unweighted):				
Men	*939*	*548*	*258*	*113*
Women	*1394*	*582*	*359*	*75*
All adults	*2333*	*1130*	*617*	*188*

a Any cardiovascular condition, including IHD (heart attack or angina), stroke, heart murmur, abnormal heart rhythm or 'other heart trouble' - excludes diabetes and high blood pressure

b Excludes diabetes diagnosed during pregnancy

c Heart attack or angina

Table 9.6 Any CVD, doctor-diagnosed diabetes, any CVD or diabetes, IHD, stroke, IHD or stroke (age-standardised), 2016, by overweight and obesity and sex

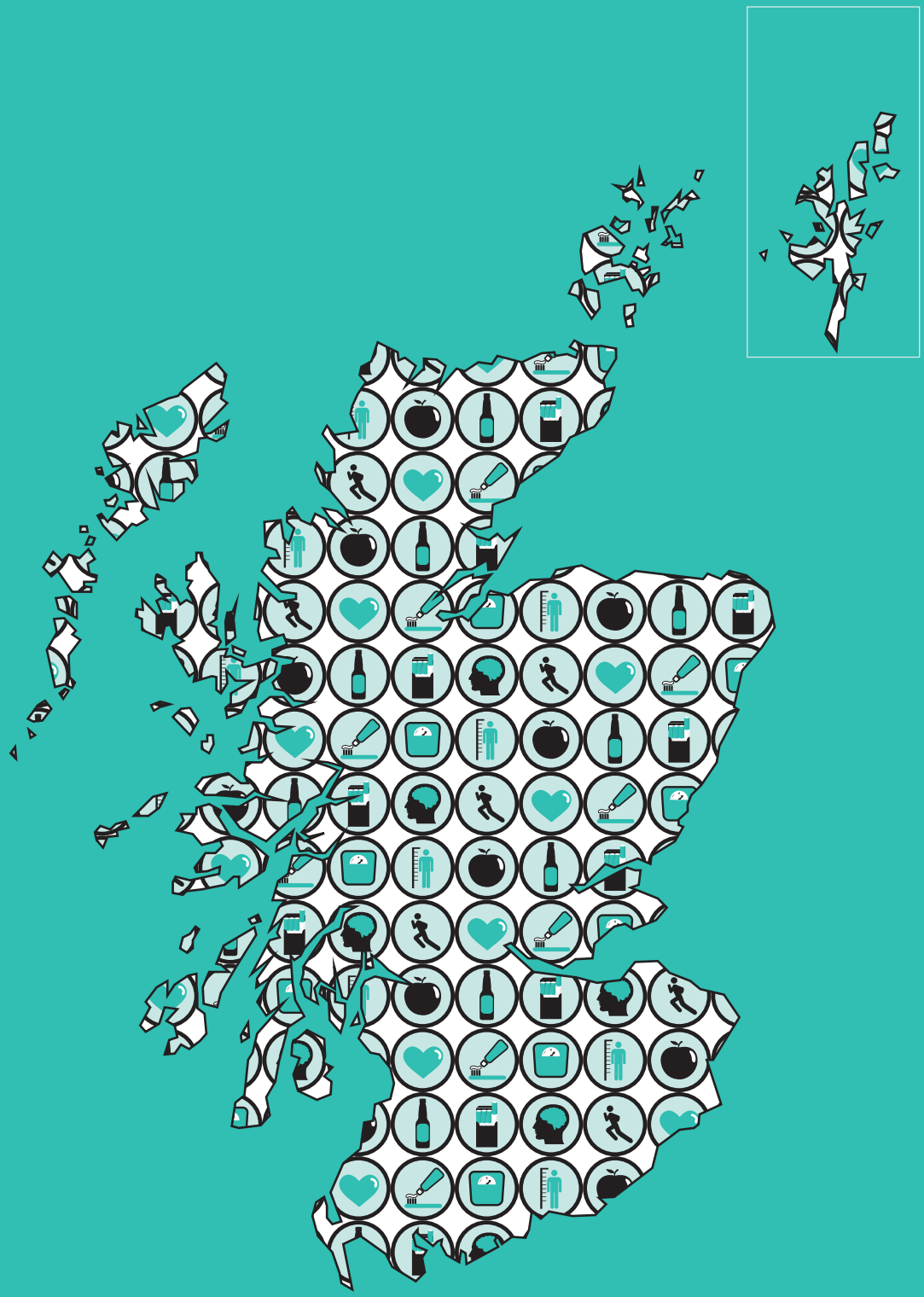
Aged 16 and over *2016*

Any CVD[a] / doctor-diagnosed diabetes[b] / any CVD or diabetes[b] / IHD[c] / stroke / IHD or stroke	Overweight and obesity		
	Underweight/ normal weight (less than 25)	Overweight (25 to less than 30)	Obese / morbidly obese (30 and over)
	%	%	%
Men			
Any CVD	13	14	19
Doctor-diagnosed diabetes	3	4	10
Any CVD or diabetes	16	17	24
IHD	5	5	8
Stroke	3	2	3
IHD or Stroke	8	7	11
Women			
Any CVD	15	12	16
Doctor-diagnosed diabetes	3	3	9
Any CVD or diabetes	17	15	22
IHD	3	3	6
Stroke	2	2	3
IHD or Stroke	5	5	8
All adults			
Any CVD	14	13	17
Doctor-diagnosed diabetes	3	4	9
Any CVD or diabetes	16	16	23
IHD	4	4	7
Stroke	3	2	3
IHD or Stroke	6	6	9
Bases (weighted):			
Men	*554*	*693*	*499*
Women	*699*	*573*	*521*
All adults	*1253*	*1266*	*1020*
Bases (unweighted):			
Men	*456*	*662*	*485*
Women	*725*	*641*	*612*
All adults	*1181*	*1303*	*1097*

a Any cardiovascular condition, including IHD (heart attack or angina), stroke, heart murmur, abnormal heart rhythm or 'other heart trouble' - excludes diabetes and high blood pressure

b Excludes diabetes diagnosed during pregnancy

c Heart attack or angina

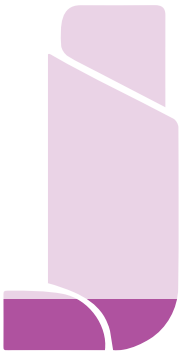


Chapter 10

Respiratory Health

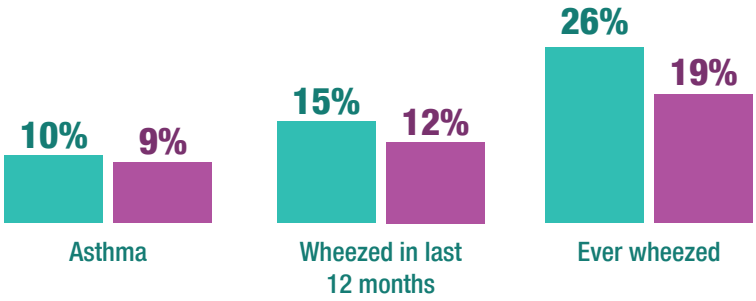
SUMMARY

- In 2016, 4% of adults reported having Chronic Obstructive Pulmonary Disease (COPD), continuing the stable level since 2008.
- Reported COPD was associated with area deprivation; 2% of adults in the two least deprived quintiles, compared with 7% of those in the most deprived areas.
- At 10% in 2016, the proportion of all children, aged 0-15 years, that had reported doctor-diagnosed asthma has remained unchanged from 2015, reinforcing the observation of reduced levels since 2003 (16%).



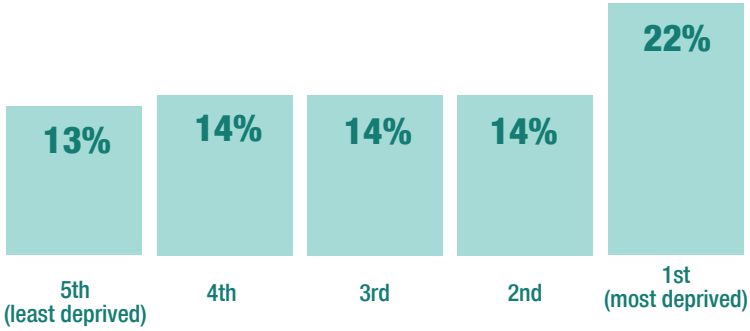
Reported adult asthma diagnoses increased from 13% in 2003 to 17% in 2015 and has reduced to **15%** in 2016

Difference in asthma diagnosis and wheezing between boys and girls

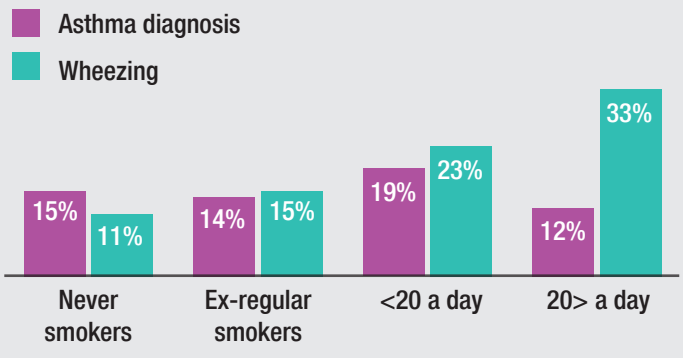


- The prevalence of having wheezed in the last 12 months was higher among older adult age groups (17-18% for those aged 45 and over compared to 11-13% for those aged 16-44).
- The prevalence of ever wheezing was also linked to deprivation, with prevalence higher in the most deprived areas (36%) than the least deprived areas (25%).
- The prevalence of COPD varied with smoking status, from 1% of those who never or occasionally smoked, to 8% of those who smoked 20 cigarettes or more per day.

Adults self-reported wheezing in the past 12 months was highest in the most deprived areas



Prevalence of wheezing in the past 12 months increased from 11% for never smokers to 33% for those smoking 20 or more a day. However, those smoking 20 or more a day were least likely to report doctor diagnosed asthma



10 RESPIRATORY HEALTH

Keeva Rooney

10.1 INTRODUCTION

Long-term respiratory conditions, such as asthma and chronic obstructive pulmonary disease (COPD) affect the flow of air in and out of the lungs. Both of these conditions are currently incurable and thought to be widely underdiagnosed[1,2]. As such, they represent a significant challenge for the individuals that live with them and for health services in Scotland.

The UK has one of the world's highest rates of asthma[3], an illness characterised by variable and recurring symptoms of breathlessness, wheezing, coughing and chest tightness. Based on Quality Outcomes Framework data for 2011- 2012 financial year, it is estimated that around 320,000 people in Scotland are presently receiving treatment for asthma[4], a fifth of whom are children[5].

The reasons for the high prevalence of asthma in the UK are not clear, with the existence of the condition being associated with genetic factors, as well as environmental pollutants, including maternal smoking during pregnancy[6]. Factors associated with the onset of asthma attacks are wide ranging and include exposure to house dust mites, pollen, animals, specific foods, viral infections, moulds, fungi, environmental tobacco smoke[7], and air pollution[8]. Occupational exposures account for a substantial proportion of adult asthma incidence[9]. In many cases, asthma does not significantly affect quality of life when it is properly controlled[10]. Inhalers prescribed for respiratory conditions such as asthma had the highest total prescribed drug cost in the community (£35.5 million) in Scotland for 2015/2016[11]. The economic burden of asthma on the NHS in Scotland is estimated to be around £97.5 million a year, most of which is accounted for by prescription costs[4].

Estimates suggest that treating COPD costs the NHS in Scotland around £159 million a year and this will rise to £207 million a year by 2030[12]. COPD, which is less common than asthma, is a chronic and irreversible lung condition caused by restricted airways resulting in breathing difficulties, persistent coughing and abnormal sputum production[13]. The breathing restrictions associated with COPD are a major cause of repeated hospital admissions in Scotland[14].

Like asthma, the risk of COPD is increased by exposure to environmental pollutants and smoking. However, the role played by smoking is far greater in the case of COPD than in asthma. While asthma often appears in childhood or adolescence, COPD onset occurs in middle to late adulthood (though early life experiences, including childhood asthma, can increase its risk)[15,16,17]. The associations of long term conditions like COPD with deprivation, lifestyle risk factors and wider social health determinants are of importance in Scotland given the country's persistent health inequalities[11].

10.1.1 Policy background

There has been increasing generic policy attention given to long-term conditions in Scotland, which tends to focus on community support and self-management[18]. However, there is some policy aimed specifically at respiratory conditions.

One of the Scottish Government's **National Performance Framework National Outcomes** is for people in Scotland to 'live longer, healthier lives'[19]. There is also a National Performance Indicator to 'reduce premature mortality' (deaths from all causes in those aged under 75)[20]. COPD is a major cause of death in Scotland, hence COPD prevention and better symptom management contributes to reducing premature mortality[21]. In addition, a number of the National Indicators[22] and many of the major public health initiatives that have been introduced in recent years are linked to key respiratory disease risk factors, most notably smoking[23], but also physical activity[24] and obesity[25].

Both asthma and COPD were included in the Quality and Outcomes Framework (QOF) used to measure general practice performance, though only COPD had an associated outcome measure (introduced in 2013/2014 relating to the measurement of oxygen saturation values)[26]. Due to the recent decommissioning of QOF in Scotland, its data is no longer publicly reported or used to inform payments to GP practices. The QOF data may continue to be extracted to support the peer led GP Cluster Continuous Quality Improvement process as part of the latest General Medical Services Contract.

Healthcare Improvement Scotland produced clinical standards for COPD in 2010[27]. A number of clinical guidelines have been produced for respiratory conditions including the Scottish Intercollegiate Guidelines Network guideline on the management of asthma ((SIGN) Guideline 153 - published September 2016[28] .

In 2016, the Smoking Prohibition (Children in Motor Vehicles) (Scotland) Bill was introduced, making it illegal from the 5th December 2016 to smoke in a car or vehicle whilst carrying those aged under 18 – an offence that could carry a £100 fixed penalty.

The Scottish Government is currently working with the Respiratory National Advisory Group to develop a quality improvement plan for Scotland, which is anticipated to be completed in 2017.

10.1.2 Reporting on respiratory conditions and symptoms in the Scottish Health Survey (SHeS)

The Scottish Health Survey (SHeS) is a valuable source of information on the self-reported prevalence of asthma and COPD in Scotland. It collects information about respiratory symptoms such as phlegm production, wheezing and breathlessness, symptoms often experienced by people without a diagnosed respiratory condition. It also provides

valuable information on the patterning of these conditions and symptoms across different population groups.

This chapter presents data on adults' self-reported doctor-diagnosed asthma, COPD prevalence, and respiratory symptoms (wheezing). Children's asthma diagnoses and wheezing symptoms are also reported. Information on whether people with COPD receive treatment and the treatment type is also reported.

Area deprivation data for respiratory health are presented using Scottish index of Multiple Deprivation (SIMD) quintiles. To ensure that the comparisons presented are not confounded by the different age profiles of the quintiles, the data have been age-standardised. Readers should refer to the Glossary at the end of this Volume for a detailed description of SIMD and age-standardisation.

Supplementary tables providing further breakdowns are available on the Scottish Government SHeS website[29].

10.2 METHODS

10.2.1 Asthma and COPD diagnoses

Participants (including parents of children aged 0-12, and children themselves aged 13-15) were asked if a doctor had ever told them they had asthma. This question was asked in the 1998, 2003, 2008 and 2010 surveys, and has been included every year since 2012. Each year since 2008, adult participants have also been asked if they had ever had COPD, chronic bronchitis or emphysema, and if so, whether a doctor had told them they had one of these conditions. Those who reported doctor-diagnosed COPD were also asked what treatment or advice they had received. No objective measures were used to confirm these reported diagnoses.

10.2.2 Respiratory symptoms

Questions on respiratory symptoms were included in the 1995-2003 surveys, and in all even years since 2008. The symptoms covered were: phlegm production, breathlessness and wheezing or whistling in the chest. Breathlessness was classified as grade 2 if it occurred when hurrying on level ground or walking up a slight hill, or grade 3 (the more severe form) if it occurred when walking with other people of the same age on level ground. The impact of such symptoms on sleep and people's daily activities was also measured. The Medical Research Council Respiratory Symptom Questionnaire was used to collect some of this information[30].

10.2.3 Treatment for COPD

Questions on whether people are currently receiving any treatment or advice for COPD, chronic bronchitis or emphysema and if so, what type of treatment were introduced in SHeS in 2008.

10.3 SELF-REPORTED DOCTOR-DIAGNOSED ASTHMA AND SELF-REPORTED WHEEZING

This section looks at the self-reported lifetime prevalence of doctor-diagnosed asthma, wheezing or whistling in the chest in the last 12 months (referred to in the text as wheezing in the last 12 months), and lifetime wheezing. Trend data are presented for all adults aged 16 and over and for all children, aged 0-15, from 2003. As these questions were only asked of sub-samples in 2008 and 2010, data for those years have been combined.

10.3.1 Trends in self-reported doctor-diagnosed asthma and wheezing prevalence in adults since 2003

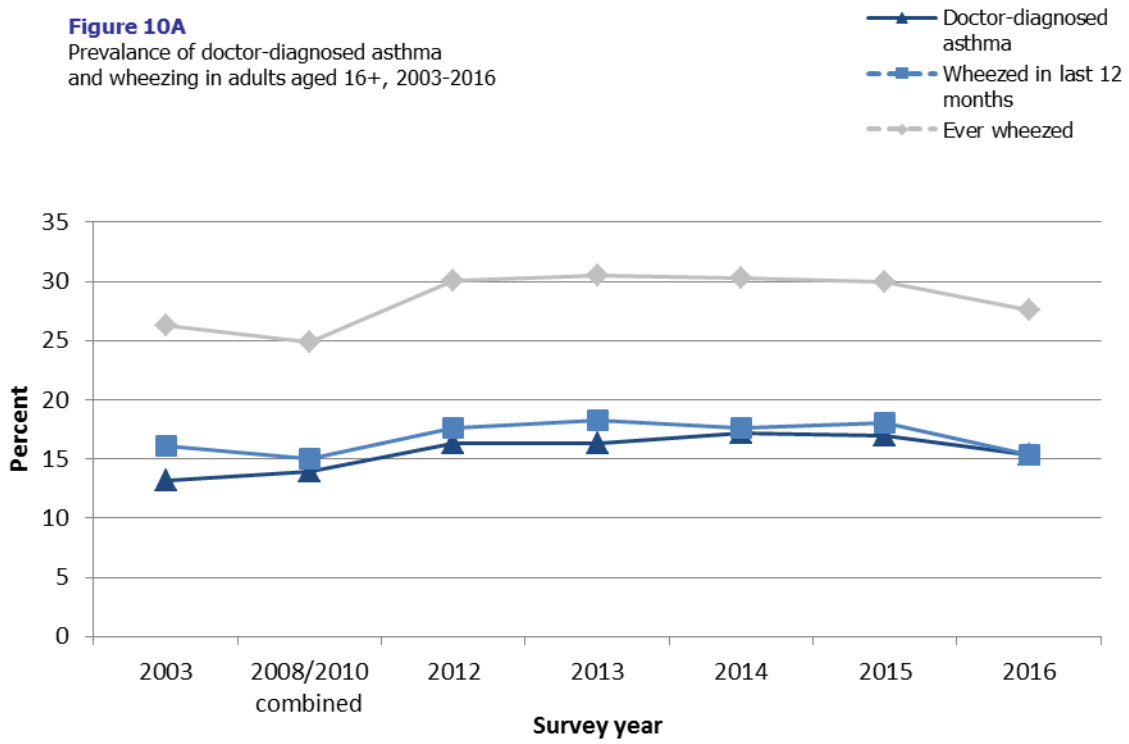
The percentage of people with doctor-diagnosed asthma in 2016 (15%) has not changed significantly from 2015 (17%). The proportion has fluctuated between 13% and 17% since the start of the time series in 2003.

The prevalence of wheezing in the last 12 months has dropped significantly to 15% in 2016, having previously been stable at 18% since 2012.

In 2016, 28% of adults reported having ever wheezed, a decrease from 2015 (30%) with the rate having been relatively stable since 2012 (between 30% and 31%).

Prevalence across the three measures (doctor-diagnosed asthma, ever having wheezed, and wheezing in the last 12 months) were similar for both men and women. **Figure 10A, Table 10.1**

Figure 10A
Prevalance of doctor-diagnosed asthma and wheezing in adults aged 16+, 2003-2016



10.3.2 Trends in self-reported doctor-diagnosed asthma and wheezing prevalence in children since 2003

At 10% in 2016, the proportion of all children (aged 0-15) that have reported doctor-diagnosed asthma has remained unchanged from 2015, confirming the pattern of reduced prevalence since the start of the time series in 2003 (16%).

The prevalence of wheezing in the last 12 months for children was 13% in 2016; this has remained relatively constant since 2003 ranging between 12-14%. Similarly, rates of having ever wheezed remained relatively steady at 23%, having fluctuated between 21% and 25% since 2003.

In 2016 prevalence of doctor-diagnosed asthma was similar for boys and girls (10% and 9% respectively). Prevalence of having wheezed within the last 12 months was also similar for boys and girls (15% and 12% respectively). Boys were more likely to have ever wheezed than girls (26% and 19% respectively).

Prevalence of doctor diagnosed asthma fell for boys between 2003 (20%) and 2016 (10%) to a similar level to that for girls. Prevalence for girls fluctuated between 9% and 12% over the same period; 9% in 2016. Prevalence of wheezing in the previous 12 months was similar for boys and girls (15% and 12% respectively), with little change among girls since 2003 (11-12%) and some fluctuation for boys since 2003 (13-17%). Prevalence of ever having wheezed has shown little change over time with higher levels for boys (24-29%; 26% in 2016) than girls (19-22%; 19% in 2016). **Table 10.1**

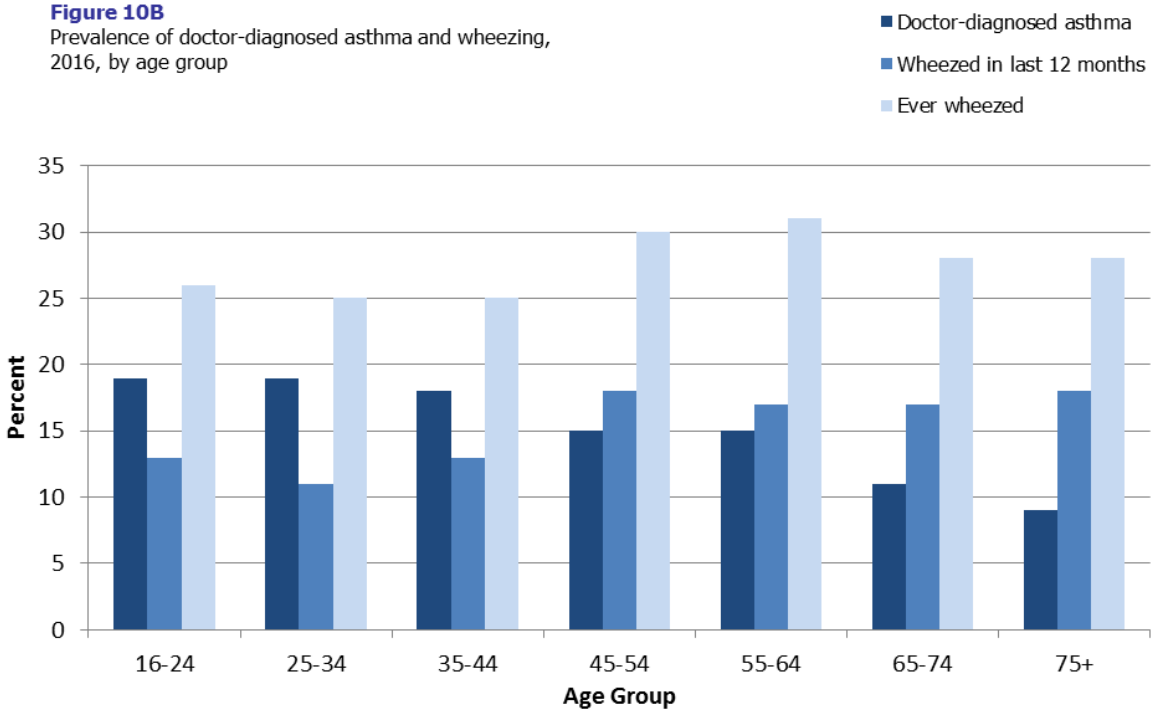
10.3.3 Self-reported doctor-diagnosed asthma and wheezing prevalence in adults in 2016, by age and sex

As in previous years, prevalence of doctor-diagnosed asthma decreased with age in 2016, from 19% for 16-25 year olds, to 9% for adults aged 75 and older. Similar patterns were found for men and women.

Figures for having wheezed in the last 12 months also differed significantly by age. Adults aged 45 and over were more likely to report wheezing in the last 12 months (17-18%), than younger adults (11-13%).

There was no clear pattern across age groups for prevalence of those who had ever wheezed. **Figure 10B, Table 10.2**

Figure 10B
Prevalence of doctor-diagnosed asthma and wheezing, 2016, by age group



10.3.4 Self-reported doctor-diagnosed asthma and wheezing prevalence in 2016, by area deprivation (age-standardised)

Adults in the most deprived areas were significantly more likely to have doctor-diagnosed asthma than those in the least deprived areas (18% compared with 13%). A similar significant pattern was observed for women, however no significant association was found for men.

The proportion of adults who reported wheezing in the last 12 months increased significantly by deprivation status. In the most deprived areas 22% of adults (22% of men and 21% of women) reported wheezing in the last 12 months, compared to 13% of adults (15% of men and 11% of women) in the least deprived areas.

The prevalence of reporting ever having wheezed was also significantly associated with deprivation. The percentage of adults reporting ever having wheezed was 25% for those living in the least deprived areas and 36% for those living in the most deprived areas. Patterns were similar for men and women. **Table 10.3**

10.3.5 Self-reported doctor-diagnosed asthma and wheezing prevalence in 2016, by smoking status (age-standardised)

The prevalence of those who had ever wheezed or had wheezed in the last 12 months increased with smoking status. Prevalence of ever having wheezed ranged from 22% for those who had never smoked / smoked occasionally to 45% among those who smoked 20 or more cigarettes a day. Prevalence of wheezing in the last 12 months was 11% for those who had never smoked/smoked occasionally, rising to

33% for those who smoked 20 or more a day. In both cases prevalence did not significantly differ between men and women.

There were no statistically significant differences between the prevalence of asthma for different smoking statuses. Asthma prevalence peaked among those who smoked fewer than 20 cigarettes a day (19%) whilst those who smoked 20 or more a day had the lowest prevalence of doctor-diagnosed asthma at 12%. Non-smokers / those who smoked occasionally and those who used to smoke had similar asthma prevalence rates (15% and 14% respectively). The pattern of asthma prevalence and smoking status was similar for men and women. Although there was an apparent difference in asthma prevalence between men and women who smoked 20 or more cigarettes a day (9% men compared to 17% of women), this difference was not significant. **Table 10.4**

10.4 DOCTOR-DIAGNOSED COPD

This section looks at the self-reported prevalence of doctor-diagnosed (COPD), in adults aged 16 and over.

10.4.1 Trends in COPD prevalence in adults since 2008

The prevalence of doctor-diagnosed COPD in adults was 4% in 2016, continuing the stable trend since 2008 of 4% for every year with the exceptions of 2009 (3%) and 2010 (5%).

Rates of prevalence of doctor-diagnosed COPD were similar for men and women throughout this period. **Table 10.5**

10.4.2 COPD prevalence in 2016, by age and sex

A total of 4% of all adults reported having doctor-diagnosed COPD, with prevalence being highest in the older age-groups (9-11% for those aged 65 and over compared to 0-1% for those aged 16-44). Similar patterns were found for both men and women. **Table 10.6**

10.4.3 COPD prevalence in 2016, by area deprivation

As in previous years, doctor-diagnosed COPD was significantly associated with area deprivation, with the lowest prevalence (2%) found among adults in the two least deprived quintiles, and the highest prevalence (7%) in the most deprived.

This pattern was broadly similar for men and women, although men in the most deprived quintile reported a lower proportion of COPD than women (6% and 9%, respectively). **Table 10.7**

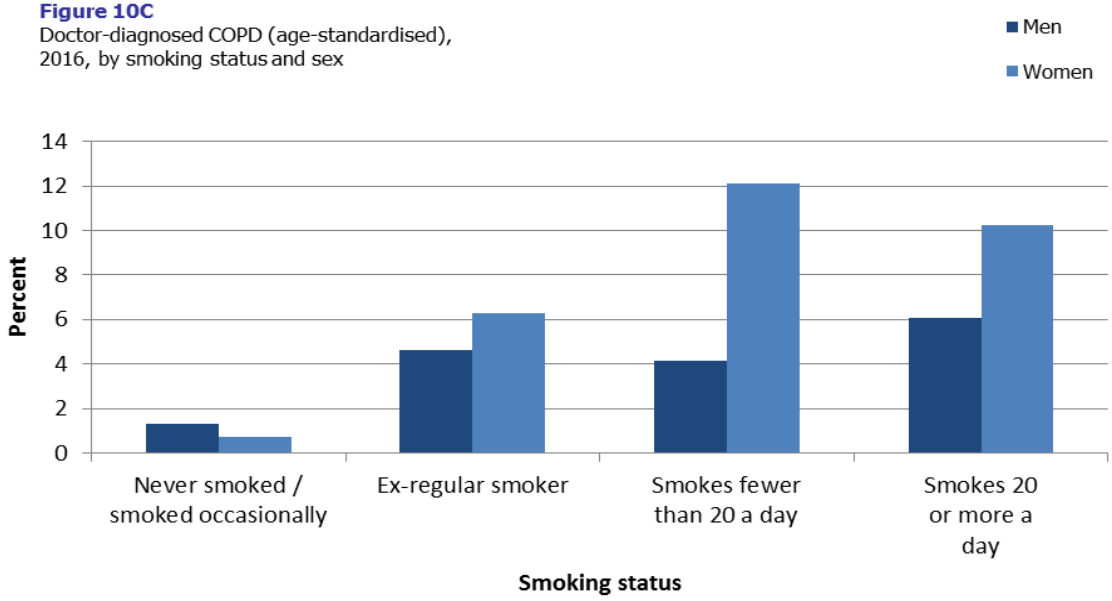
10.4.4 COPD prevalence in 2016, by smoking status

Prevalence of doctor-diagnosed COPD was lower for those who were ex-smokers (5%) than those smoking 20 or less a day (8%) and those

smoking 20 or more a day (8%). The lowest prevalence was reported in adults who never / or only occasionally smoked (1%).

A similar pattern was found for women. However, for men, although there was significantly lower prevalence of COPD amongst those who never / or only occasionally smoked (1%) there were no significant differences in COPD prevalence between the remaining smoking statuses (see Figure 10C). **Figure 10C, Table 10.8**

Figure 10C
Doctor-diagnosed COPD (age-standardised), 2016, by smoking status and sex



10.4.5 COPD treatment and advice in 2013-2016 combined

Of all adults with doctor-diagnosed COPD, 73% were receiving treatment (71% of men and 75% of women). Treatment varied with age, with those aged 65 and over more likely to be receiving treatment (80%) than those aged 16-64 (66%). Prevalence of those receiving treatment for COPD was the same for both men and women aged 65 and over (80%). There was no statistically significant difference in prevalence of those receiving treatment between men and women (71% and 75% respectively).

Taking medication (tablets / inhalers)

Taking medication such as tablets or inhalers was the most common form of treatment (68%) with similar findings for men and women. Adults aged 65 and over were more likely to report this as a treatment than those aged 16-64 (74% compared with 61%).

Regular check-up with GP / hospital / clinic

Of adults who were diagnosed with COPD, 61% had regular check-ups with medical professionals as a treatment for COPD. This was the second most common treatment at 68% for those aged 65 and over and 53% for those aged 16-64. Figures were similar for men and women.

Immunisations against influenza/pneumococcus

Immunisation against flu and / or pneumococcus was the third most common treatment for COPD, reported by 35% of adults. This treatment was more prevalent in men aged 65 and over at 43% than for men aged 16-64 (25%), whilst rates for women were similar for the two age groups (36% for those aged 16-64 and 32% for those 65 and over).

Advice or treatment to stop smoking

Of adults diagnosed with COPD, 22% reported that they had advice or treatment to stop smoking in order to treat COPD, with no difference between men and women. However, this differed significantly by age, with 26% of adults aged 16-64 years and 18% of those aged 65 and over reporting having received advice or treatment to stop smoking. This treatment was more prevalent among men aged 16-64 (32% compared to 14% of men aged 65 and over). The prevalence of women who reported this treatment was the same for both age groups (22%).

Exercise or physical activity

Exercise accounted for 10% of reported COPD treatment (9% of adults aged 16-64 and 10% of adults aged 65 and over). Men were more likely to use exercise or physical activity as a treatment for COPD compared to women (14% and 6%, respectively). Men aged 65 and over reported the highest use of this treatment (16% compared to 13% of men aged 16-64). Rates were similar for women of both age groups (6-7%).

Advice / treatment to lose weight

Advice or treatment to lose weight was reported by 6% of adults as a treatment for their COPD with no significant difference by age. There were no significant differences between men and women.

Using oxygen

Using oxygen was the least common treatment for COPD (4%). Prevalence of this treatment was the same for both the 16-64 and 65 and over age groups (5% for women and 3% for men).

Figure 10D, Table 10.9

Figure 10D
COPD treatment and type of treatment, 2013/2014/2015/2016 combined, by age and sex

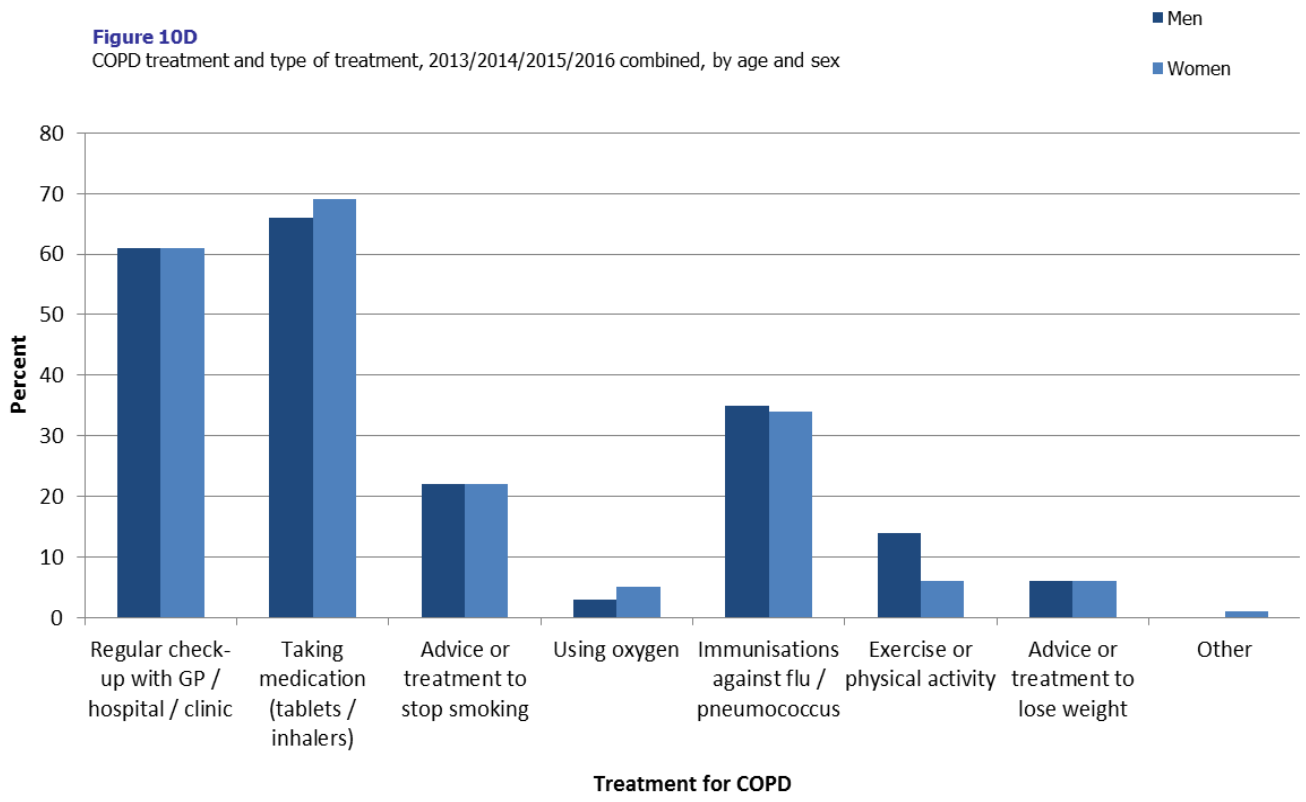


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Table list

Table 10.1 Doctor-diagnosed asthma, wheezed in last 12 months, and ever wheezed, 2003 to 2016, by age and sex

All persons *2003-2016*

Asthma and wheezing	2003	2008/ 2010 combined	2012	2013	2014	2015	2016
	%	%	%	%	%	%	%
Males							
Doctor-diagnosed asthma							
0-15	20	14	15	15	12	11	10
16+	13	13	16	16	16	16	15
Wheezed in last 12 months[a]							
0-15	16	14	15	17	13	13	15
16+	16	14	17	17	18	18	16
Ever wheezed							
0-15	29	24	27	28	24	24	26
16+	27	24	30	29	31	31	28
Females							
Doctor-diagnosed asthma							
0-15	12	12	9	12	10	10	9
16+	14	15	17	17	18	18	16
Wheezed in last 12 months[a]							
0-15	12	11	11	12	12	11	12
16+	16	16	18	19	18	18	15
Ever wheezed							
0-15	20	19	19	22	20	19	19
16+	26	25	30	32	30	30	27
All							
Doctor-diagnosed asthma							
0-15	16	13	12	13	11	10	10
16+	13	14	16	16	17	17	15
Wheezed in last 12 months[a]							
0-15	14	12	13	14	12	12	13
16+	16	15	18	18	18	18	15
Ever wheezed							
0-15	25	22	23	25	22	21	23
16+	26	25	30	31	30	30	28

Continued…

Table 10.1 - *Continued*

All persons *2003 - 2016*

Asthma and wheezing	2003	2008/ 2010 combined	2012	2013	2014	2015	2016
Bases (weighted):							
Males 0-15	*1700*	*960*	*914*	*939*	*852*	*725*	*798*
Males 16+	*3847*	*2228*	*2309*	*2343*	*2237*	*2394*	*2073*
Females 0-15	*1622*	*917*	*873*	*899*	*815*	*695*	*763*
Females 16+	*4290*	*2432*	*2506*	*2546*	*2421*	*2596*	*2245*
All children 0-15	*3322*	*1877*	*1786*	*1838*	*1667*	*1420*	*1561*
All adults 16+	*8137*	*4660*	*4815*	*4889*	*4658*	*4989*	*4318*
Bases (weighted):							
Males 0-15	*1655*	*994*	*879*	*947*	*842*	*735*	*771*
Males 16+	*3603*	*1999*	*2127*	*2137*	*2068*	*2243*	*1892*
Females 0-15	*1667*	*883*	*907*	*891*	*825*	*685*	*790*
Females 16+	*4536*	*2659*	*2688*	*2752*	*2589*	*2749*	*2428*
All children 0-15	*3322*	*1877*	*1786*	*1838*	*1667*	*1420*	*1561*
All adults 16+	*8139*	*4658*	*4815*	*4889*	*4657*	*4992*	*4320*

a Wheezing or whistling in the chest

Table 10.2 Doctor-diagnosed asthma, wheezed in last 12 months, and ever wheezed, 2016, by age and sex

Aged 16 and over *2016*

Asthma and wheezing	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Doctor-diagnosed asthma	21	19	19	12	13	10	7	15
Wheezed in last 12 months[a]	12	12	14	19	15	19	20	16
Ever wheezed	27	28	27	26	32	28	32	28
Women								
Doctor-diagnosed asthma	16	19	16	18	17	12	10	16
Wheezed in last 12 months[a]	14	10	11	18	20	16	17	15
Ever wheezed	24	22	24	33	30	28	25	27
All adults								
Doctor-diagnosed asthma	19	19	18	15	15	11	9	15
Wheezed in last 12 months[a]	13	11	13	18	17	17	18	15
Ever wheezed	26	25	25	30	31	28	28	28
Bases (weighted):								
Men	*286*	*338*	*320*	*380*	*326*	*255*	*167*	*2073*
Women	*283*	*353*	*338*	*407*	*344*	*281*	*238*	*2245*
All adults	*569*	*691*	*658*	*788*	*670*	*536*	*404*	*4318*
Bases (unweighted):								
Men	*168*	*213*	*265*	*341*	*360*	*337*	*208*	*1892*
Women	*198*	*325*	*347*	*440*	*433*	*400*	*285*	*2428*
All adults	*366*	*538*	*612*	*781*	*793*	*737*	*493*	*4320*

a Wheezing or whistling in the chest

Table 10.3 Doctor-diagnosed asthma, wheezed in last 12 months, and ever wheezed (age-standardised), 2016, by area deprivation and sex

Aged 16 and over *2016*

Asthma and wheezing	Area deprivation				
	5th (Least deprived)	4th	3rd	2nd	1st (Most deprived)
	%	%	%	%	%
Men					
Doctor-diagnosed asthma	14	16	13	15	17
Wheezed in last 12 months[a]	15	16	14	13	22
Ever wheezed	28	29	26	24	38
Women					
Doctor-diagnosed asthma	12	14	17	17	19
Wheezed in last 12 months[a]	11	12	14	16	21
Ever wheezed	22	23	28	27	33
All adults					
Doctor-diagnosed asthma	13	15	15	16	18
Wheezed in last 12 months[a]	13	14	14	14	22
Ever wheezed	25	26	27	26	36
Bases (weighted):					
Men	*444*	*386*	*446*	*384*	*413*
Women	*474*	*385*	*458*	*430*	*498*
All adults	*918*	*771*	*904*	*813*	*911*
Bases (unweighted):					
Men	*422*	*421*	*430*	*325*	*294*
Women	*512*	*505*	*552*	*438*	*421*
All adults	*934*	*926*	*982*	*763*	*715*

a Wheezing or whistling in the chest

Table 10.4 Doctor-diagnosed asthma, wheezed in last 12 months, and ever wheezed (age-standardised), 2016, by smoking status and sex

Aged 16 and over *2016*

Asthma and wheezing	Smoking status[a]			
	Never smoked / smoked occasionally	Ex-regular smoker	Smokes fewer than 20 a day	Smokes 20 or more a day
	%	%	%	%
Men				
Doctor-diagnosed asthma	14	14	19	9
Wheezed in last 12 months[b]	10	16	22	35
Ever wheezed	22	30	35	48
Women				
Doctor-diagnosed asthma	15	15	18	17
Wheezed in last 12 months[b]	12	14	23	30
Ever wheezed	22	26	36	41
All adults				
Doctor-diagnosed asthma	15	14	19	12
Wheezed in last 12 months[b]	11	15	23	33
Ever wheezed	22	28	35	45
Bases (weighted):				
Men	*1068*	*522*	*309*	*130*
Women	*1282*	*506*	*360*	*76*
All adults	*2350*	*1028*	*669*	*205*
Bases (unweighted):				
Men	*939*	*548*	*258*	*113*
Women	*1396*	*582*	*359*	*75*
All adults	*2335*	*1130*	*617*	*188*

a Excludes cases where respondent did not know how many they smoked a day
b Wheezing or whistling in the chest

Table 10.5 Doctor-diagnosed COPD, 2008 to 2016

Aged 16 and over *2008 - 2016*

Doctor-diagnosed COPD	2008	2009	2010	2011	2012	2013	2014	2015	2016
	%	%	%	%	%	%	%	%	%
Men									
Yes	3	3	4	3	4	3	3	4	4
No	97	97	96	97	96	97	97	96	96
Women									
Yes	4	4	5	4	4	4	4	4	4
No	96	96	95	96	96	96	96	96	96
All adults									
Yes	4	3	5	4	4	4	4	4	4
No	96	97	95	96	96	96	96	96	96
Bases (weighted):									
Men	*3088*	*3601*	*3468*	*3609*	*2309*	*2347*	*2238*	*2401*	*2077*
Women	*3377*	*3929*	*3777*	*3931*	*2506*	*2547*	*2421*	*2597*	2246
All adults	*6465*	*7530*	*7245*	*7540*	*4815*	*4894*	*4659*	*4997*	*4323*
Bases (weighted):									
Men	*2842*	*3288*	*3115*	*3279*	*2127*	*2140*	*2069*	*2246*	*1894*
Women	*3623*	*4242*	*4130*	*4261*	*2688*	*2754*	*2590*	*2750*	*2429*
All adults	*6465*	*7530*	*7245*	*7540*	*4815*	*4894*	*4659*	*4996*	*4323*

Table 10.6 Doctor-diagnosed COPD, 2016, by age and sex

Aged 16 and over *2016*

Doctor-diagnosed COPD	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Yes	-	0	1	2	5	9	12	4
No	100	100	99	98	95	91	88	96
Women								
Yes	-	0	1	4	7	9	10	4
No	100	100	99	96	93	91	90	96
All adults								
Yes	-	0	1	3	6	9	11	4
No	100	100	99	97	94	91	89	96
Bases (weighted):								
Men	*289*	*338*	*320*	*382*	*326*	*255*	*167*	*2077*
Women	*283*	*354*	*338*	*407*	*344*	*281*	*238*	*2246*
All adults	*572*	*692*	*658*	*790*	*670*	*536*	*404*	*4323*
Bases (unweighted):								
Men	*169*	*213*	*265*	*342*	*360*	*337*	*208*	*1894*
Women	*198*	*326*	*347*	*440*	*433*	*400*	*285*	*2429*
All adults	*367*	*539*	*612*	*782*	*793*	*737*	*493*	*4323*

Table 10.7 Doctor-diagnosed COPD (age-standardised), 2016, by area deprivation and sex

Aged 16 and over *2016*

Doctor-diagnosed COPD	Scottish Index of Multiple Deprivation				
	5th (Least deprived)	4th	3rd	2nd	1st (Most deprived)
	%	%	%	%	%
Men					
Yes	2	2	4	4	6
No	98	98	96	96	94
Women					
Yes	2	2	3	4	9
No	98	98	97	96	91
All adults					
Yes	2	2	4	4	7
No	98	98	96	96	93
Bases (weighted):					
Men	*444*	*386*	*446*	*389*	*413*
Women	*474*	*385*	*458*	*430*	*498*
All adults	*918*	*771*	*904*	*818*	*911*
Bases (unweighted):					
Men	*422*	*421*	*430*	*327*	*294*
Women	*512*	*505*	*553*	*438*	*421*
All adults	*934*	*926*	*983*	*765*	*715*

Table 10.8 Doctor-diagnosed COPD (age-standardised), 2016, by smoking status and sex

Aged 16 and over *2016*

Doctor-diagnosed COPD	Smoking status[a]			
	Never smoked / smoked occasionally	Ex-regular smoker	Smokes fewer than 20 a day	Smokes 20 or more a day
	%	%	%	%
Men				
Yes	1	5	4	6
No	99	95	96	94
Women				
Yes	1	6	12	10
No	99	94	88	90
All adults				
Yes	1	5	8	8
No	99	95	92	92
Bases (weighted):				
Men	*1068*	*522*	*309*	*130*
Women	*1282*	*506*	*360*	*76*
All adults	*2350*	*1028*	*669*	*205*
Bases (unweighted):				
Men	*939*	*548*	*258*	*113*
Women	*1396*	*582*	*359*	*75*
All adults	*2335*	*1130*	*617*	*188*

a Excludes cases where respondent did not know how many they smoked a day

Table 10.9 COPD treatment and type of treatment, 2013-2016 combined, by age and sex

Aged 16 and over with COPD *2013-2016 combined*

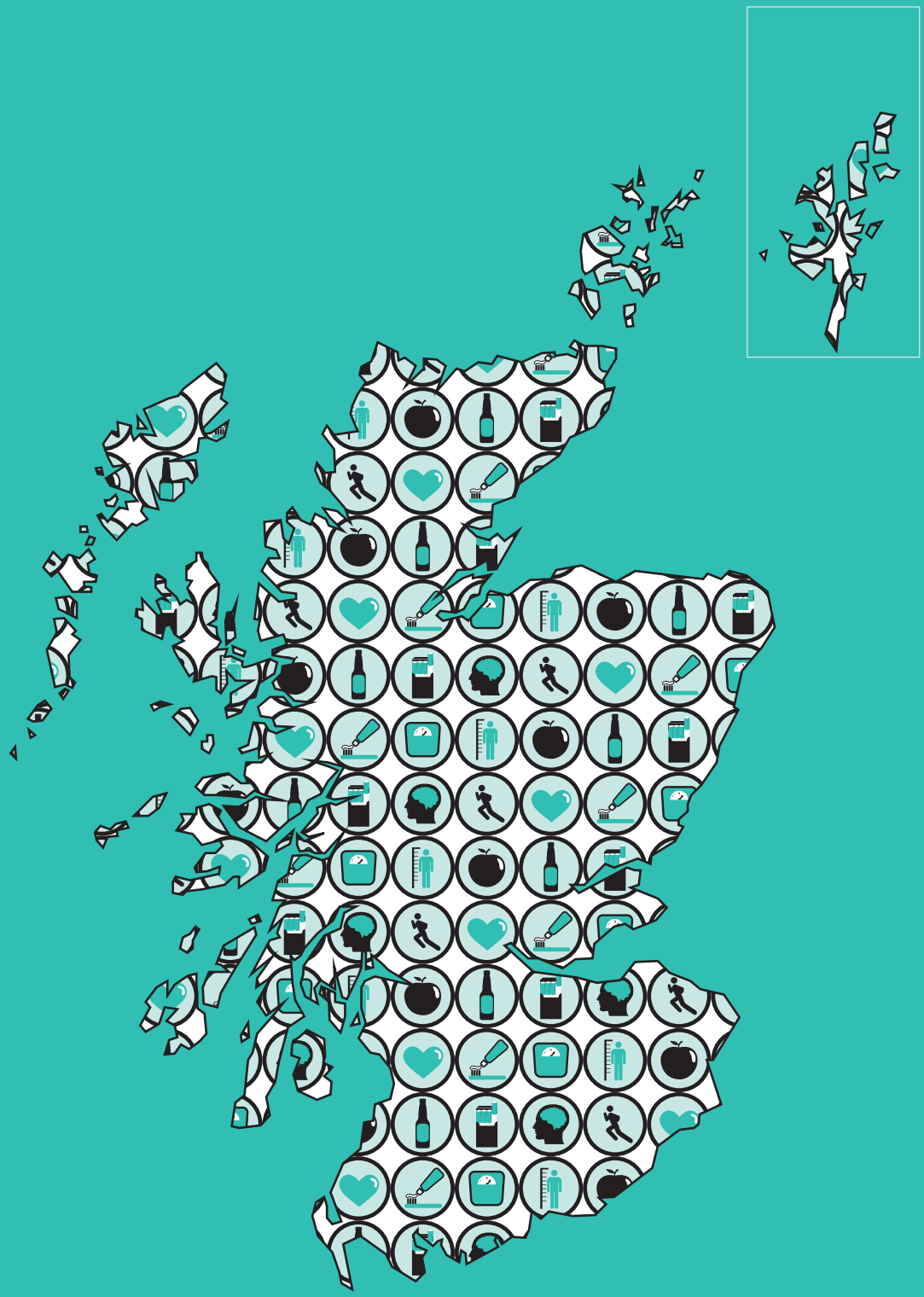
Type of treatment received	Age		Total
	16-64	65+	
	%	%	%
Men			
Regular check-up with GP / hospital / clinic	48	71	61
Taking medication (tablets / inhalers)	56	74	66
Advice or treatment to stop smoking	32	14	22
Using oxygen	3	3	3
Immunisations against flu / pneumococcus	25	43	35
Exercise or physical activity	13	16	14
Advice or treatment to lose weight	8	4	6
Other	0	0	0
Any COPD treatment received	60	80	71
No COPD treatment received	40	20	29
Women			
Regular check-up with GP / hospital / clinic	56	66	61
Taking medication (tablets / inhalers)	64	75	69
Advice or treatment to stop smoking	22	22	22
Using oxygen	5	5	5
Immunisations against flu / pneumococcus	36	32	34
Exercise or physical activity	7	6	6
Advice or treatment to lose weight	7	5	6
Other	1	1	1
Any COPD treatment received	70	80	75
No COPD treatment received	30	20	25

Continued…

Table 10.9 - *Continued*

Aged 16 and over with COPD *2013-2016 combined*

Type of treatment received	Age		Total
	16-64	65+	
	%	%	%
All adults			
Regular check-up with GP / hospital / clinic	53	68	61
Taking medication (tablets / inhalers)	61	74	68
Advice or treatment to stop smoking	26	18	22
Using oxygen	4	4	4
Immunisations against flu / pneumococcus	32	37	35
Exercise or physical activity	9	10	10
Advice or treatment to lose weight	8	5	6
Other	1	1	1
Any COPD treatment received	66	80	73
No COPD treatment received	34	20	27
Bases (weighted):			
Men	*132*	*171*	*303*
Women	*201*	*209*	*410*
All adults	*334*	*380*	*713*
Bases (unweighted):			
Men	*137*	*209*	*346*
Women	*220*	*254*	*474*
All adults	*357*	*463*	*820*



Appendix A:

Glossary

APPENDIX A: GLOSSARY

This glossary explains terms used in the report, other than those fully described in particular chapters.

Age Standardisation

Age standardisation has been used in order to enable groups to be compared after adjusting for the effects of any differences in their age distributions**.**

When different sub-groups are compared in respect of a variable on which age has an important influence, any differences in age distributions between these sub-groups are likely to affect the observed differences in the proportions of interest.
Age standardisation was carried out, using the direct standardisation method. The standard population to which the age distribution of sub-groups was adjusted was the mid-2015 population estimates for Scotland. All age standardisation has been undertaken separately within each sex.

The age-standardised proportion p' was calculated as follows, where p_i is the age specific proportion in age group *i* and N_i is the standard population size in age group *i*:

$$p' = \frac{\sum_i N_i p_i}{\sum_i N_i}$$

Therefore p' can be viewed as a weighted mean of p_i using the weights N_i. Age standardisation was carried out using the age groups: 16-24, 25-34, 35-44, 45-54, 55-64, 65-74 and 75 and over. The variance of the standardised proportion can be estimated by:

$$var(p') = \frac{\sum_i (N_i^2 p_i q_i / n_i)}{(\sum_i N_i)^2}$$

where $q_i = 1 - p_i$.

Anthropometric measurement

See **Body mass index** (BMI)

Arithmetic mean

See **Mean**

Bases

See **Unweighted bases, Weighted bases**

Body mass index

Weight in kg divided by the square of height in metres. Adults (aged 16 and over) can be classified into the following BMI groups:

BMI (kg/m^2)	*Description*
Less than 18.5	Underweight
18.5 to less than 25	Normal
25 to less than 30	Overweight
30 to less than 40	Obese
40 and above	Morbidly obese

Although the BMI calculation method is the same, there are no fixed BMI cut-off points defining overweight and obesity in children. Instead, overweight and obesity are defined using several other methods including age and sex specific BMI cut-off points or BMI percentiles cut-offs based on reference populations. Children can be classified into the following groups:

Percentile cut-off	*Description*
At or below 2nd percentile	At risk of underweight
Above 2nd percentile and below 85th percentile	Healthy weight
At or above 85th percentile and below 95th percentile	At risk of overweight
At or above 95th percentile	At risk of obesity

Cardiovascular Disease

Participants were classified as having cardiovascular disease (CVD) if they reported ever having any of the following conditions diagnosed by a doctor: angina, heart attack, stroke, heart murmur, irregular heart rhythm, 'other heart trouble'. For the purpose of this report, participants were classified as having a particular condition only if they reported that the diagnosis was confirmed by a doctor. No attempt was made to assess these self-reported diagnoses objectively. There is therefore the possibility that some misclassification may have occurred, because some participants may not have remembered (or not remembered correctly) the diagnosis made by their doctor.

Chronic Obstructive Pulmonary Disease (COPD)

COPD is defined by the World Health Organisation (WHO) as 'a pulmonary disease characterised by chronic obstruction lung airflow that interferes with normal breathing and is not fully reversible.' It is associated with symptoms and clinical signs that in the past have been called 'chronic bronchitis' and 'emphysema,' including regular cough (at least three consecutive months of the year) and production of phlegm.

Electronic cigarettes

Electronic cigarettes or e-cigarettes are battery-powered handheld devices which heat a liquid that delivers a vapour. The vapour is then inhaled by the user, which is known as 'vaping'. E-cigarettes typically consist of a battery, an atomiser and a cartridge containing the liquid. Earlier models, often referred to as 'cigalikes', were designed to closely resemble

cigarettes but there is now a wide variety of product types on the market. The liquid is usually flavoured and may not contain nicotine, although in most cases e-cigarettes are used with nicotine. Unlike conventional or traditional cigarettes, they do not contain tobacco and do not involve combustion (i.e. they are not lit). The questions about e-cigarettes were amended in 2016 to include the term 'vaping devices'.

Frankfort plane

The Frankfort Plane is an imaginary line passing through the external ear canal and across the top of the lower bone of the eye socket, immediately under the eye. Informants' heads are positioned with the Frankfort Plane in a horizontal position when height is measured using a stadiometer as a means of ensuring that, as far as possible, the measurements taken are standardised.

GHQ12

The General Health Questionnaire (GHQ12) is a scale designed to detect possible psychiatric morbidity in the general population. It was administered to informants aged 13 and above. The questionnaire contains 12 questions about the informant's general level of happiness, depression, anxiety and sleep disturbance over the past four weeks. Responses to these items are scored, with one point given each time a particular feeling or type of behaviour was reported to have been experienced 'more than usual' or 'much more than usual' over the past few weeks. These scores are combined to create an overall score of between zero and twelve. A score of four or more (referred to as a 'high' GHQ12 score) has been used in this report to indicate the presence of a possible psychiatric disorder.

Reference: Goldberg D, Williams PA. *User's Guide to the General Health Questionnaire.* NFER-NELSON, 1988.

Household

A household was defined as one person or a group of people who have the accommodation as their only or main residence and who either share at least one meal a day or share the living accommodation.

Household Reference Person

The household reference person (HRP) is defined as the householder (a person in whose name the property is owned or rented) with the highest income. If there is more than one householder and they have equal income, then the household reference person is the oldest.

Ischaemic heart disease

Ischaemic heart disease (IHD) is also known as coronary heart disease. Participants were classified as having IHD if they reported ever having angina, a heart attack or heart failure diagnosed by a doctor.

Long-term conditions & limiting long-term conditions

Long-term conditions were defined as a physical or mental health condition or illness lasting, or expected to last 12 months or more. The wording of this question changed in 2012 and is now aligned with the harmonised questions for all large Scottish Government surveys.

Long-term conditions were coded into categories defined in the International Classification of Diseases (ICD), but it should be noted that the ICD is used mostly to classify conditions according to the cause, whereas SHeS classifies according to the reported symptoms. A long-term condition was defined as limiting if the respondent reported that it limited their activities in any way.

Mean

Most means in this report are **Arithmetic means** (the sum of the values for cases divided by the number of cases).

Median

The value of a distribution which divides it into two equal parts such that half the cases have values below the median and half the cases have values above the median.

Morbid obesity

See **Body mass index.**

Multiple risks

Four risk factors were examined in chapter 6 – (i) being a current smoker (ii) drinking alcohol at hazardous/harmful levels (i.e. drinking above the recommended maximum of 14 units per week) (iii) being obese with a BMI of 30 or more (iv) not meeting the physical activity guidelines of 150 minutes of moderate activity or 70 minutes of vigorous activity (or combination of both) per week. These risk factors are widely accepted as having a negative impact on health.

The number of risks was totaled and the prevalence of 2 or more risks (defined as multiple risks) was examined by area deprivation and prevalence of long-term conditions and limiting long-term conditions. **See also Long-term conditions and limiting long-term conditions**.

NHS Health Board

The National Health Service (NHS) in Scotland is divided up into 14 geographically-based local NHS Boards and a number of National Special Health Boards. Health Boards in this report refers to the 14 local NHS Boards. (See Volume 2: Appendix B)

Obesity

See **Body mass index**

Overweight

See **Body mass index**

Percentile

The value of a distribution which partitions the cases into groups of a specified size. For example, the 20th percentile is the value of the distribution where 20 percent of the cases have values below the 20th percentile and 80 percent have values above it. The 50th percentile is the median.

p value

A p value is the probability of the observed result occurring due to chance alone. A p value of less than 5% is conventionally taken to indicate a statistically significant result ($p<0.05$). It should be noted that the p value is dependent on the sample size, so that with large samples differences or associations which are very small may still be statistically significant. Results should therefore be assessed on the magnitude of the differences or associations as well as on the p value itself. The p values given in this report take into account the clustered sampling design of the survey. See also **Significance testing**.

Quintile

Quintiles are percentiles which divide a distribution into fifths, i.e., the 20th, 40th, 60th and 80th percentiles.

Scottish Index of Multiple Deprivation

The Scottish Index of Multiple Deprivation (SIMD) is the Scottish Government's official measure of area based multiple deprivation. It is based on 37 indicators across 7 individual domains of current income, employment, housing, health, education, skills and training and geographic access to services and telecommunications. SIMD is calculated at data zone level, enabling small pockets of deprivation to be identified. The data zones are ranked from most deprived (1) to least deprived (6505) on the overall SIMD index. The result is a comprehensive picture of relative area deprivation across Scotland.

This report uses the SIMD 2016.
http://www.scotland.gov.uk/Topics/Statistics/SIMD

Significance testing

Where differences in relation to a particular outcome between two subgroups, such as men and women, are highlighted in volume 1 of this report, the differences can be considered statistically significant, unless otherwise stated.

Statistical significance is calculated using logistic regression to provide a **p-value** based on a two-tailed significance test. One tailed-tests are used when the difference can only be in one direction. Two-tailed tests should always be used when the difference can theoretically be in either direction. For example, even though previous research has shown a higher prevalence of hazardous levels of alcohol consumption among men than

among women, and we may expect this to be true in the most recent survey, a two-tailed test is used to confirm the difference.

Standard deviation The standard deviation is a measure of the extent to which the values within a set of data are dispersed from, or close to, the mean value. In a normally distributed set of data 68% of the cases will lie within one standard deviation of the mean, 95% within two standard deviations and 99% will be within 3 standard deviations. For example, for a mean value of 50 with a standard deviation of 5, 95% of values will lie within the range 40-60.

Standard error The standard error is a variance estimate that measures the amount of uncertainty (as a result of sampling error) associated with a survey statistic. All data presented in this report in the form of means are presented with their associated standard errors (with the exception of the WEMWBS scores which are also presented with their standard deviations). Confidence intervals are calculated from the standard error; therefore the larger the standard error, the wider the confidence interval will be.

Standard error of the mean See **Standard Error**

Standardisation In this report, standardisation refers to standardisation (or 'adjustment') by age (see **Age standardisation**).

Unit of alcohol Alcohol consumption is reported in terms of units of alcohol. A unit of alcohol is 8 gms or 10ml of ethanol (pure alcohol). See Chapter 1 of volume 1 of this Report for a full explanation of how reported volumes of different alcoholic drinks were converted into units.

Unweighted bases The unweighted bases presented in the report tables provide the number of individuals upon which the data in the table is based. This is the number of people that were interviewed as part of the SHeS and provided a valid answer to the particular question or set of questions. The unweighted bases show the number of people interviewed in various subgroups including gender, age and SIMD.

Weighted bases See also **Unweighted bases**. The weighted bases are adjusted versions of the unweighted bases which involves calculating a weight for each individual so that their representation in the sample reflects their representation in the general population of Scotland living in private households. Categories within the table can be combined by using the weighted bases to calculate weighted averages of the relevant categories.

WEMWBS The Warwick-Edinburgh Mental Well-being Scale (WEMWBS) was developed by researchers at the Universities of Warwick and Edinburgh, with funding provided by NHS Health Scotland,

to enable the measurement of mental well-being of adults in the UK. It was adapted from a 40 item scale originally developed in New Zealand, the Affectometer 2. The WEMWBS scale comprises 14 positively worded statements with a five item scale ranging from ‘1 - None of the time’ to ‘5 - All of the time’. The lowest score possible is therefore 14 and the highest is 70. The 14 items are designed to assess positive affect (optimism, cheerfulness, relaxation); and satisfying interpersonal relationships and positive functioning (energy, clear thinking, self-acceptance, personal development, mastery and autonomy).

References:

Kammann, R. and Flett, R. (1983). *Sourcebook for measuring well-being with Affectometer 2.* Dunedin, New Zealand: Why Not? Foundation.

The briefing paper on the development of WEMWBS is available online from:
<http://www.wellscotland.info/guidance/How-to-measure-mental-wellbeing/How-to-start-measuring-mental-wellbeing/The-Warwick-Edinburgh-Mental-Wellbeing-Scale->

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How to access background or source data

The data collected for this statistical report:
☒ will be made available via the UK Data Service

☒ may be made available on request, subject to consideration of legal and ethical factors. Please contact scottishhealthsurvey@gov.scot for further information.

Further breakdowns of the data:
☒ are available via the Scottish Health Survey website
www.scotland.gov.uk/Topics/Statistics/Browse/Health/scottish-health-survey

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